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OUR Butte correspondent, who is thoroughly well informed on the condition of the Montana mines and their cost of production, thinks that at least the Anaconda and Montana companies can stand the fight as long as the Calumet & Hecla or other Lake companies.

Butte expects to have a great reduction in the cost of fuel when the new railroad connections are made; and this in particular is one of the strong points we have all along taken, that it is foolish to exhaust mines at unprofitable prices when a great reduction of cost has been merely a question of brief time, and a reduction in output while waiting for this reduction in cost would improve the price of their product. The Bozeman coal, on the North Pacific, is not, however, of very desirable quality, and it may be a few years before the Missouri coal will be brought in by the Montana Central road. Undoubtedly, the Anaconda is pursuing a wise policy in commencing the treatment of custom silver ores, to which we have already referred.

It is generally understood that the Parrot will not push production quite as much during the second half of the year as it has in the first; but there is as yet no talk of the Arizona mines curtailing production, though none will increase output. On the whole, our production will probably be somewhat less this year than it was in 1885, and consumption is certainly greater.

MR. F. COLLINGWOOD made an eloquent address before the Rensselaer Society of Engineers at Troy, New York, on the 15th inst., on "Some Often Neglected Duties of the Engineer." Mr. COLLINGWOOD dwelt more particularly on the necessity of cordial recognition of the services of subordinates by their chiefs, and upon the need of a fuller *esprit de corps* among engineers. The question of engineers' charges for services also receives much-needed attention; for, as Mr. COLLINGWOOD says, it is "a fact that, almost without exception, our best engineers *never* acquire a competence by the legitimate practice of their profession."

We regret that we have not the space to publish Mr. COLLINGWOOD'S address in full; but we must quote a few lines, at least, to show some of the points touched on:

"An engineer has no right to have any other interest than that of his employer: he degrades the profession and brings discredit upon it whenever he allows himself to be placed in a position where he is actuated by divided motives."

Mr. COLLINGWOOD counts it "a duty and obligation resting upon every man to make known the results of all professional practice which have novelty or are of value for any other reason."

We cordially indorse this sentiment, and a pretty wide experience convinces us that it is quite as much to the benefit of the giver as to that of the receiver.

The whole subject of the address is covered in this paragraph:

"We must cultivate an *esprit de corps* by which we shall come to feel that if one suffers all suffer, by which the world shall know that we do not work merely for hire, and by which we shall make ourselves felt as fully entitled to recognition as professional men, and to be treated accordingly."

THE SAPPHIRE PROSPECTUS.

The value of a vivid imagination is nowhere better illustrated than in preparing a mining prospectus for the London market. Plain, practical mining engineers can scarcely understand how the presence of a bonanza in one district or vein has any influence on the value of a mine in some other district or on some other vein, and there are those who are skeptical about the future value of a claim that adjoins a bonanza mine on the same vein. No such hesitation, however, exists in the minds of those who "fish for gudgeons" in the muddy waters of the London market. To them, somebody else's bonanza, whether on their own vein or some other, is worth a fortune, by opening the pockets of their credulous clients. If this beneficent bonanza is in an adjoining claim, so much the better; but if not, a good mine on some other vein, or even in some other district, country, or age, may serve the end. Sometimes, however, even the English birds are not to be caught with such utter chaff as a distant bonanza, and the experienced snarer deems it necessary to have one, at any cost, "adjacent" to the claim to be sold. A curious example of this is given in recent London mining papers. The company is called "the Sapphire Gold and Silver Company, Limited," organized with a share capital of £130,000, and £20,000 of debentures, to purchase, etc., "the Frontenac and Searle gold and silver mines, in Gilpin County, Colo., 2½ miles south of Central City." It is of no consequence that these mines, for which "£125,000 in cash and shares and debentures" is to be paid, are so little known that they have not even been recorded in the last Colorado Directory, where nearly every "hole in the ground" is noticed. The prospectus says that "the lode has been proved to the extent of 12,000 feet." Perhaps on some one else's property.

"A low estimate of the product from the two mines gives 12,000 tons [of $37 ore] a year, yielding $150,000 net profit, though the 'official returns' for March were 180 tons = $3996.63; of April, 200 tons, valued at $4200; and the May yield "promises to be fully equal to that of April."

The fact that about $4000 per month net value of the ore at the furnace would not quite "figure out" $150,000 dividends a year, even if the ore cost nothing to mine, might weaken some of the less sanguine investors; so the proximity of a great bonanza became necessary. The prospectus, therefore, tells us that "the following mines *are adjacent to*

the Sapphire property: Small Hopes Consolidated, which has produced £165,000 per annum; Evening Star, £140,000 per annum; Iron Silver, £80,000 per annum; and Morning Star, £60,000 per annum." All these mines are at Leadville, nearly 200 miles from Central City and from the mines to which they are said to be adjacent.

It would be curious to know whether this astounding statement is simply a vulgar lie, told with the object of cheating some of CARLYLE'S "thirty millions," or whether it is only an unusually high flight of poetic license, which characterizes all such purely imaginative works as London promoters' prospectuses. We may even suggest some other explanation. Every one knows that the transparency of the Colorado atmosphere makes distances extremely deceptive to the unaccustomed eye of the tender-foot.

We have all heard of the innocent who started out to walk from Denver to the foot-hills and back before breakfast; and while his disappointment was still fresh upon him, he came with his companion to a ditch or cañada, through which was trickling a sickly rivulet that it would be easy to step across almost dry-shod. He deliberately halted on the bank and commenced undressing preparatory to a swim. "Why," said his companion, "you can step across that!" "No, you don't fool me any more in this country," said the enlightened tender-foot; "it's true it looks as if you could step across it; but I have no doubt you will find it a good half-hour's swim to the other side!"

After a few such experiences, the tender-foot may even be brought to doubt all his impressions as to distance, and perhaps may discount even a railroad time-table (which says it is 191 miles from Central City to Leadville) to such an extent as to bring the Leadville mines *adjacent* to the Central City claims. Or possibly, this may have been intended only as a profound and witty compliment to the greatness of this country; for it is well known that the native Briton is profuse of both compliments and wit. It is true that what appears as at a great distance in microscopic Britain would here, even without the deceptive atmosphere of the great West, seem near by; but we modestly assure them that this country is nevertheless not so vast as to make Leadville and Central City appear as one, or a claim within a few miles of each appear as "adjacent."

"THE CASSEL GOLD COMPANY—AN EXPOSÉ."

This title to an article in the London *Mining Journal* of the 5th inst. tells an expected tale.

Our readers will remember that the Cassel chlorination process was heralded with glowing reports and fabulous figures in the London papers about a year ago, and that on August 8th last we referred to these statements as "wholly absurd or incomprehensible." On October 3d, page 231, we stated, for the benefit of our London mining and engineering exchanges, that "the Cassel process is not, it appears, original," . . . "and any improvements CASSEL may have made would belong to a company here with which Mr. CASSEL was employed." We also said, "Mr. CASSEL'S record while in this country was not such as to inspire unlimited confidence in him," which, notwithstanding Mr. CASSEL'S letter published November 14th last, should have been sufficient to put our confiding cousins on their guard. Of course, the English papers never referred to these remarks or gave the benefit of them to their readers. We have observed that they rarely, if ever, do notice anything throwing light upon the real character of the wild-cats and bubbles that are large advertisers in their pages.

The end appears to have come to the Cassel bubble sooner than we expected; for it was backed by respectable names and much capital. We are told that shares that were quoted £5 each a short time ago have fallen to £1 10s., and no doubt will, before long, disappear altogether. The sudden collapse has come about, according to the posthumous wisdom of the London *Mining Journal*, by Mr. CASSEL having disposed of some 7500 shares, more or less, that he had agreed to hold in the company. Apparently the promoters of the company are not even yet advised of the *exposé* published in this journal nine months ago. It is said that Mr. CASSEL and a Mr. JACOBS, who represents "an American syndicate" that proposes to purchase these doubtful patents of a doubtful process, are about to return to America.

NEW PUBLICATIONS.

MAP OF SOUTHWEST VIRGINIA AND CONTIGUOUS TERRITORY. *Mineral Resources and Railroad Facilities, Statistics, Information, Markets for Coke, Fuel, Ores, etc.* By C. R. BOYD, M.E. 1886. Cloth covers. $2.

Mr. C. R. Boyd, of Wytheville, Virginia, has recently published an extremely useful geological and mineralogical map of Southwest Virginia, in which he has given a great amount of information. The deposits of various kinds of iron ores; lead, zinc, and copper ores, plaster, and salt are indicated in appropriate colors, and the various geological measures are also shown in color. The district covered by Mr. Boyd's map is one of the richest in this country in minerals, and the thousands of persons who are more or less interested in it will find this map extremely useful. It is to be regretted that so much work should have been printed on such inferior paper.

OFFICIAL STATEMENTS AND REPORTS.

Caledonia Gold Mining Company, Dakota.

The following report, though brief, is comprehensive, and gives most of the information shareholders have a right to expect:

The directors present herewith to the shareholders the accounts and statements for the fiscal year ended April 30th, 1886, the former showing a surplus of $75,806.07, out of which they have paid four dividends of $10,000 each, amounting to $40,000, and leaving a surplus of $35,806.07 to be carried over.

Beyond the regular mining operations, sinking, drifting, and extracting of ore, there has been no extraordinary outlay for improvements during the past year; but the reserves of ore above the present bottom level (425-foot level) are rapidly diminishing, unless new ore-bodies are discovered still on this level, an effort to find which is, of course, continuously made. It has become necessary, therefore, to explore the mine at a greater depth. To do this, it has been found necessary to sink an entirely new main working-shaft from the surface, as the old shaft is unfortunately not in a favorable position for either the economical exploration of the mine in depth nor for the cheap hoisting of the ore expected to be found; and besides, the machinery in the old shaft is not adequate for the future requirements of the mine. To ascertain whether the prospects of the mine warranted such an outlay, which it is estimated will cost between $50,000 and $60,000, the directors have had a winze sunk below the present bottom level, and they are pleased to say that, so far, its prospects are very encouraging. A drift from this winze will now be run as far as it is practicable and prudent, and if it establishes a continuance of good ore to that depth, the new shaft will be sunk as rapidly as possible. In view of this probably extraordinary outlay, the directors deemed it prudent to suspend the dividends and to accumulate a surplus, so as to carry on the work without having to call on the shareholders for assistance.

We are pleased to say that in the discovery ledge, which also belongs to the company and which has not been worked of late years, some good, profitable ore is developed, and, as the ledge is large, it is to be hoped a correspondingly large body will be uncovered, which would place the company on velvet.

During the first three months of the current fiscal year, no ore was extracted from the mine, as the 425-foot level had not reached the ore-body, and there was no ore available in the old workings, owing to the cave; since then, however, there have been extracted 48,848 tons of ore, which yielded $224,098.50 in bullion, or say $4.58 a ton.

The cost of mining during the nine months, including prospecting and dead-work and general expenses, was $101,402 23, equal to $2.07 a ton.

The cost of milling this ore was $43,099,27, equal to $0.88 a ton. It will be seen, therefore, that the property has been very economically worked, and will bear comparison with any mine in the country.

In conclusion, we will say that the mill and other improvements of the property are in good order and condition, and the prospects of the company are quite encouraging. Respectfully,

THOMAS BELL, President.

STATEMENT OF RECEIPTS AND DISBURSEMENTS AND BALANCE-SHEET FOR FISCAL YEAR ENDED APRIL 30TH, 1886

RECEIPTS:			
Surplus, from last annual		$7,025.09	
Assessment No. 16		15,000 00	
Bullion, net		224,098.50	$246,123.59
DISBURSEMENTS:			
Mining:			
Labor	$77,690.55		
Supplies	20,619.03		
Improvements	150.00		
General expenses	7,235.98		
Milling:			
Labor	$16,459.75		
Supplies	26,639.52		
Contingencies:			
Legal expenses	$6,794.17		
Mine purchase	2,475.00		
Assessment charges	66.50		
Interest	178.94		
Transfer-agency expenses	1,189.69		
Insurance	2,254 25		
Taxes	3,909,48		
Extraordinary expenses	946.80		
General expenses, etc	3,645.86		$170 317.52
Surplus			$75,806.07
Dividend, Nos. 1 to 4			40,000 00
Net surplus			$35,806.07

Small Hopes Consolidated Mining Company, Leadville, Colo.

This is one of the richest of Leadville's bonanzas. The company was incorporated January 18th, 1880, and the receipts from ore from that date to April 1st, 1886, amounted to $2,539,460.24, and from sales of capital stock, $43,603.25. The expenses at the mine during this period were $503,213.03; and in New York, $19,432.17; by bank failure, $3143.52; leaving a net balance of profit of $2,057,274.77, accounted for as follows:

Dividends from February, 1884, to March 26th, 1886	$1,937,500.00
Surplus fund	40,131 42
Other cash assets	69,774 87
Pumping plant	9,468.48
	$2,057,274.77

The mine is a remarkably profitable one, and the report very briefly states that the mine never looked better than at present, and that the future is encouraging.

It would be very interesting and useful to know how much ore has been extracted during the year, the furnace returns per ton, the cost of mining, the amount of dead-work done, the amount of reserves of ore on hand, the general expenses, salaries, etc., all of which so good a mine can well afford to state, and which every company is in duty bound to give its stockholders. No such information is given in the official report.

Bronze Metal in Bars for Coinage.—The English Mint now buys bronze metal for coinage in bars ready for rolling, that arrangement being more profitable than the former practice of buying the materials for the manufacture of bronze separately.

THE ATTAINMENT OF UNIFORMITY IN THE BESSEMER PROCESS.

By H. M. Howe.

The tenacity with which a bad name adheres to a process is well illustrated by the prevalent belief in the irregularity of the product of the Bessemer converter. We have been lately told by an eloquent member that lack of uniformity is the name of Bessemer steel, and that uniform soft steel can only be made in the Clapp-Griffiths Bessemer converter. Yet I believe that, however irregular the percentage of carbon in Bessemer steel may have been formerly, to-day it is completely under control. Indeed, the results of a large number of analyses that I have studied go to show that the Bessemer process is to-day not only far more uniform than the crucible process, but, when producing soft steel, even more so than the open hearth: they do not establish this conclusion, they merely point toward it.

The data were obtained while gathering materials for a work on steel metallurgy which the ENGINEERING AND MINING JOURNAL now has in preparation; and it is by the courtesy of its editors that I am enabled to present my results here.

The plan which I have pursued in studying this subject is the following: I have obtained from eight different Bessemer works* the percentage of carbon in a large number of consecutive heats. In all but one of these cases, I selected the period covered by these heats wholly at random, and with absolutely no information as to whether it would represent their most or their least uniform work. You may call each such set of heats a mere straw; but when all the straws point in the same direction, we may guess which way the wind blows. I have also obtained similar data concerning the open-hearth steel of the Otis Works,† and of another works of the very highest reputation; while Mr. P. G. Salom's‡ paper on chemical and physical tests gives us the carbon of 162 heats made at the Chester Rolling-Mills.

Now, confining ourselves for the moment to any one set of consecutive heats, we first determine its average percentage of carbon. The difference between this average percentage and the percentage of carbon in any one heat we may call *the deviation* of that heat from the average; and by taking the sum of all these deviations, regardless of whether they be deviations in excess or in deficit, we may readily find their average, which we may term the *average deviation* of the particular set of heats in question.

In the following table are given the average percentage of carbon of each of these sets; the maximum deviation from this average occurring in each set; and the average deviation of each set.

This number, the average deviation, appears to me to be a fair index of the uniformity of composition of a set of heats. It is much less dependent on the number of heats that compose the set than the maximum deviation is; for while we may very slightly alter the average deviation by increasing the number of heats in the set, we are as likely to diminish as to increase it thereby; while the more heats a set has, the greater is the maximum deviation likely to be, since, with a greater number of heats, we are more likely to include some one heat that differs greatly from the average.

I think we can get little trustworthy information as to the uniformity of the steel by comparing the average composition of all the heats of one day with similar averages obtained on other days, because, though the percentage of carbon in each day may be very irregular, yet these irregularities may, and indeed often do, pretty nearly balance each other, so that the average of one day may be much like that of another. The average temperature of one New England decade may be almost identical with that of another, while many times each year the thermometer may have jumped 40 degrees in twenty-four hours.

Soft vs. Hard Bessemer Steel.—Soft Bessemer steel is, as we might expect, much more uniform than rail steel. Thus, the average of the three average deviations of these three lots of Bessemer rail steel is over three times (accurately, 3·39 times) as great as the average of the four average deviations of the four lots of soft Bessemer steel; or, if we omit the Clapp-Griffiths lot of soft steel as not strictly comparable, the average deviation of the three lots of rail steel is over five times (accurately, 5·32 times) as great as that of the soft steels.

Now, why is the soft Bessemer steel so much more uniform than the rail steel? It may be partly because greater care and skill are exercised in making soft steel, and partly because the removal of carbon is more rapid from steel that contains a considerable amount of this element, say from 0·35 to 0·45 per cent, as in rail steel, than from steel that is almost free from carbon, so that variations in the strength of the decarburizing tendencies and in the length of time during which the molten steel is exposed to them have a greater absolute effect in varying the percentage of carbon in the former than in the latter.

But if this were the chief determining cause of the greater uniformity of carbon in the very soft Bessemer steel, then we should also expect to find, in the case of the soft open-hearth steels as well, greater uniformity in the percentage of carbon than in open-hearth steel richer in carbon. But this we do not find in the three lots of open-hearth steel whose average deviations are given in the table, as we shall shortly see.

The chief cause of the greater uniformity of low carbon Bessemer steel I believe to be the following: In making it, the steel is blown often for upward of half a minute after the drop of the flame, so that the carbon is almost completely removed before the recarburizer is added. Now, variations in the strength of the oxidizing conditions, or in the time during which the metal is exposed to them, will, with these long over-blows, have little effect on the amount of carbon in the blown but unrecarburized steel. After the carbon has fallen to 0·05 per cent, further prolonged blowing removes the remaining carbon only very slowly: its chief effect is to burn iron. Now, variations in the length and effectiveness of the over-blow may indeed give rise to corresponding variations in the amount of iron oxide stored up in the blown but unrecarburized steel; but these variations will chiefly affect not the amount of carbon that is oxidized when the recarburizer is added, but the amount of manganese which is then oxidized, because the recarburizer employed in making this low-carbon steel contains so much more Mn than C. Hence we may find that, while this soft steel is astonishingly uniform in its percentage of carbon, the percentage of Mn that it contains varies very greatly. This is illustrated by the case of 19 consecutive heats of Vulcan steel, whose average deviation of carbon is only 0·0062 per cent, while their average deviation in manganese is no less than 0·096 per cent, or 15·5 times as great. In the Bethlehem steel, the Mn is somewhat more uniform, yet its average deviation is no less than 10·55 as great as that of the carbon, the average deviation of these two elements being respectively 0·0036 and 0·0380 per cent.

Fortunately, a given variation in the percentage of Mn in the steel affects its properties vastly less than a variation of the same amount in the percentage of carbon would.

Now, when we come to the case of rail steel, we find a very different condition of things. Here, the temptation is strong to stop the operation almost immediately after the flame drops, because every second that we blow after that, delays operations, consumes power for blowing, and wastes material by increasing the amount of Mn and C that will be oxidized when we come to recarburize. But even if we attempt to secure uniformity in the carbon contents of the blown but unrecarburized metal by over-blowing it, this will not insure uniformity in the carbon in the recarburized steel; for in this case, in order to introduce the required 0·35 to 0·45 per cent of carbon, we are compelled to employ a recarburizer whose percentage of carbon is large compared with that of its manganese, so that the unavoidable irregularities in the over-blow will affect the percentage of carbon much more than in the case of soft steel, where the recarburizer contains much Mn and little C. In other words, in rail steel, carbon is more readily oxidized because more carbon is present.

Open-Hearth vs. Bessemer.—Next, comparing the uniformity of the three lots of open-hearth steel with that of our Bessemer steel, we find, what is to me somewhat of a surprise, that the average deviation of the open-hearth steel is actually over four times (accurately, 4·32 times) as great as that of the soft Bessemer steel, omitting as before the Clapp-Griffiths Works lot, and that the smallest of the average deviations of the open-hearth steel is nearly three times (accurately, 2·679 times) as large as the largest average deviation in the four lots of soft Bessemer steel.

Again, when we come to compare the open-hearth steel with the Bessemer rail steel, we should expect to find the former very much more uniform than the latter; 1st. Because the open hearth has a better reputation for uniformity; 2d. Because the boiler plate and other special grades of steel represented by the results that we are studying are made much more carefully than Bessemer rail steel, and because uniformity in their percentage of carbon would appear to be very much more important than in the case of rail steel; 3d. Because the open-hearth steel is in two out of the three instances much lower in carbon than the Bessemer rail steel. But, in point or fact, there is no very striking difference in the uniformity of these two classes of steel, the average deviation of the three lots of open-hearth steel being 81·37 per cent of the average deviation of the three lots of rail steel.

Large vs. Small Heats.—The analogy of many other metallurgical processes would lead us to expect greater uniformity among large than among small heats. To take a single instance, in copper refining, it is so extremely difficult to keep small heats at pitch that most refiners do not attempt to control the pitch of the last portions of copper ladled from the furnace. But we should hardly expect to find the tremendous difference that here presents itself. The average deviation in the Clapp-Griffiths steel is nearly four times (accurately, 3·84 times) as great as the average of the average deviations of the four other lots of soft Bessemer steel, and 2·68 times as large as the largest of them. This result is most surprising to me, and it may well be that this particular lot of Clapp-Griffiths steel is unusually irregular, although the superintendent from whom I obtained the figures informed me that it represented about their ordinary work.*

Direct vs. Cupola-Melted Iron.—Of the three lots of Bessemer rail steel, the Joliet lot and lot A were made with direct metal, while lot B was made from cupola-melted iron. When we consider that lot B was made at a works famed for its careful and accurate work, the Joliet results, as far as they go, certainly do not point to a markedly greater irregularity in the percentage of carbon in direct metal than in cupola practice. These results, however, cover too short a period to have very great weight.

High vs. Low Carbon Open-Hearth Steel.—Finally, comparing the three lots of open-hearth steel together, we do not find that lot C, with 0·64 per cent carbon, has an appreciably greater average deviation than the other lots with 0·126 and 0·151 carbon. While these figures are too limited to

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* The Bethlehem analyses I obtained from Dr. Raymond's remarks in the discussion on Mr. J. P. Witherow's paper on the Clapp-Griffiths converter, read at the Pittsburg meeting, February, 1886. All the rest I obtained directly from the works themselves from authentic records. The Bethlehem results represent all the heats of soft steel made during the period covered, though several, if not all, of these heats of soft steel were immediately followed by heats of rail steel. The results obtained from the other Bessemer works represent absolutely consecutive heats.

† The figures concerning the Otis steel were deduced from the results of a large number of consecutive determinations of tensile strength, by assuming that boiler plate steel of 0·12, 0·13, and 0·14 carbon would have a tensile strength of 57,000, 58,600, and 60,000 pounds respectively per square inch—the figures obtained by Mr. William Kent from an analysis of Mr. Salom's paper already referred to. Any other probable assumption as to the relation between tensile strength and percentage of carbon would give almost the same results as regards the points covered in the present paper, the maximum and the average deviations from the average composition.

The Otis plates, however, varied slightly in thickness, and these variations would in themselves cause slight variations in tensile strength, even if the plates were all obtained from one and the same cast, and they hence tend to exaggerate the apparent irregularities in carbon as deduced from the tensile strength. This consideration weakens the evidence furnished by this lot of steel as to the uniformity in carbon of open-hearth steel. But no such consideration affects the evidence afforded by the Chester Rolling-Mills lot and by lot C; and as the deviation found in the Otis lot closely approaches the deviation of these other lots, it is here brought forward merely to strengthen their evidence.

‡ In Mr. Salom's paper, the percentage of carbon is omitted in a few of the heats, so that the heats composing this set are not strictly consecutive. But the omissions are few, and there is nothing in the physical properties of the heats whose carbon is omitted to suggest an abnormal percentage of carbon.

In lot C, the heats were consecutive, but different percentages of carbon were aimed at. I have here taken as the deviations of the individual heats, the differences between the percentages aimed at and the percentages of carbon actually found in the steel by analysis.

* If we drop from the Clapp-Griffiths lot one apparently abnormal heat, the average deviation is reduced to 0·0129; but this is still many times greater than the largest average deviation of the other lots of soft steel.

warrant the inference that high carbon steel can in general be made in the open hearth for long periods of time as uniform as low carbon steel, with the exercise of equal degrees of care and skill, yet they at least indicate that we need not look for much greater irregularity in the former than in the latter.

NAME OF WORKS.	Process.	Average per cent of carbon.	Maximum variation of carbon.	Average variation of carbon.	Weight of heats. Tons.	No. of heats represented.	Maximum variation of $C + \frac{Mn}{10}$	Average variation of $C + \frac{Mn}{10}$
Pittsbg St'l Cast'g Co	Bessemer.....	0 0911	0·0189	0·0025	7 (?)	45	.. ..	.....
Bellaire. ..	" .	0·081	0 011	0·0034	5	50	.....	.....
Bethlehem.	" { C	0·091	0·006	0·0036	7·25	15	{ +0·0143	+0·007
	.. . . { Mn	0·427	0 087	0·038	.....	..		
Vulcan	" . ..	0·073	0·027	0·0053	6·9	55	.. .. ..	.....
**Vulcan...	{ C	0·074	0 026	0 0062	6 9	19	{ ‡0·037	‡0 016
	..... { Mn	0 58	0 23	0·096	.. .	..		
Clapp-Griffiths.	" {	0·089	0·061	0 0142	2.1	38	.....	.....
	" {	0·0878	0·0322	0·0129	....	37	.....	.....
B	" ...	0·335	0·045	0 0144	7·5	33	.....	.....
Joliet.....	" ..	0·411	0·040	0·0195	9	35	.....	.....
A.	"	0·354	0·074	0·0252	10	49	. .....	.....
Otis..	Open-hearth. {	* 57 987 lbs	* 8973 lbs	*2416 lbs	15	55	.. ..	.....
	{	0·126	0·078	0 0142	.....	..	.....	.....
Chester ...	" ..	0·151	0·069	0·0174	.....	162	.. ..	.....
C.....	" ..	0·64	0 070	0·0165	.. . .	20	.. ..	.....

DISCUSSION.

William Kent: Mr. Howe has stated the conditions in the operation of the Bessemer process that favor uniformity of the carbon in succe-sive heats; but he does not say why such uniformity is not generally attained in the open-hearth process. In the Bessemer process, the decarbonization is carried to the extreme limit, say ·005 per cent carbon, and after the recarbonizer, containing a known quantity of carbon, has been added, there is no further decarbonization. The carbon in the finished product can therefore be regulated with certainty and uniformity. In the open-hearth process, the decarbonization is not carried so far. Before adding the recarbonizer, a sample is taken from the bath, and its carbon is estimated either by the fracture-test, or by a rapid color-test, both of these tests being liable, under the circumstances, to slight errors. While the test is being made, the bath undergoes still further decarbonization to a slight extent, which is allowed for, as nearly as it can be estimated, in the addition of the recarbonizer. Uniformity of carbon in successive heats will therefore depend upon—(1) The sample taken from the bath having the same carbon percentage as the average of the whole bath: (2) Accuracy in the carbon-test of the sample; (3) Accuracy in estimating the additional decarbonization of the bath between the time of taking the sample and the time of pouring.

Another reason may be given why a series of heats of open-hearth steel may not show a uniform carbon percentage, namely, that such uniformity is frequently not aimed at nor specially desired. A furnace running on boiler-plate steel for a variety of orders from different customers, to suit their various ideas, may have to make one heat of 0·10, another of 0·12, and another of 0·15 carbon. If the melter is told to make a lot of steel, say a whole week's run, from 0·11 to 0·14 carbon, steel varying all the way from 0·10 to 0·15 being acceptable, and applicable to the various orders on the books, it is not likely that the carbon in any large number of successive heats will be precisely the same. If, however, the furnace is running on a large order for one customer, who insists on having no steel higher than 0·12 carbon, it is likely that a higher degree of uniformity in successive heats will be reached.

George E. Thackray, Pittsburg, Pa.: As a comment upon the notes on uniformity of open-hearth steel, I produce herewith some figures showing what can be done in this respect. I regret that I have not complete memoranda at hand at present, and that, in consequence, the figures given apply to but 99 heats. These heats are not selected, but have been taken in regular order, none being omitted. They were made during the past year.

The first lot comprises 73 consecutive heats of steel containing 0·18 per cent carbon, and was made on an order for structural plates.

The second lot comprises 26 consecutive heats of steel for boiler plate, containing from 0·13 to 0·16 per cent carbon, to suit different requirements.

The average deviation of carbon is found by taking the difference between the desired and obtained carbon contents of each heat, taking the arithmetical sum of such differences, and dividing this sum by the number of heats. The results were as follows:

1. The average deviation of carbon of 73 consecutive heats of open-hearth steel, containing 0·18 per cent carbon, was found to be ·0068 per cent.

2. The average deviation of carbon of 26 consecutive heats of boiler-plate steel was found to be 0·0033 per cent.

As deduced from Mr. Howe's figures, the average deviation of all soft steel made by the pneumatic process is found to be 0·0058 per cent; so that the greater of the above deviations, ·0068 per cent, is but 0·001 per cent more than the average deviation by the pneumatic process, while the lesser of the two, 0·0033 per cent, is but three fifths of the pneumatic average deviation.

Although the best open-hearth results shown by Mr. Howe can not be accurate by reason of the method of obtaining them (from tensile strength), still, granting that they are correct, the results given above do not suffer by comparison with them; the greater of the two deviations, 0 0068 per cent, being but two fifths of that shown by him (0·0142 per cent), while the better result, 0·0033 per cent, obtained from boiler-plate practice, is less than one fourth as large.

Without entering into the details of the subject, these figures at least give evidence that open-hearth practice is more capable of producing desired percentages of carbon than Mr. Howe would have us believe.

With regard to Mr. Kent's suggestion that, in making open-hearth boiler-plate steel, the carbon may be only approximately aimed at, the ingots being selected, after casting, to fill orders of different requirements, I would say that, as open-hearth plate steel is made to order, and in consequence the ingots are made of such weights and shapes as to give the least amount of scrap in rolling and shearing, it would be impossible to operate a works successfully if the ingots were made at hap-hazard, as his suggestion would indicate. Moreover, in most cases, particularly in works the rolling capacity of which is greater than its steel producing capacity, the result would be an accumulation of useless stock in the ingot-yard, and confusion and delay in the filling of orders.

H. M. Howe: Mr. Kent's explanation of the greater irregularity in the carburization of soft open-hearth steel than in that of soft Bessemer steel, I believe to be correct; in other words, the conditions which I believe are the chief causes of the astonishing and almost unavoidable uniformity of soft Bessemer steel are absent in the case of soft open-hearth steel.

He attempts to explain away the greater uniformity of Bessemer than of open-hearth steel by supposing that the Bessemer steel makers aim at greater uniformity than the open-hearth steel makers do; so that we might suppose that, if the open-hearth men were only a little more careful, or if it was an object to them, they could obtain as great uniformity as the Bessemer men do, or perhaps greater. While this may be so, the figures that I have presented strongly oppose this view. The Pittsburg Steel Casting Company, whose steel is more uniform than any of the other lots, sends out steel intended for very many different purposes. On the other hand, the lot of 162 heats of open-hearth steel from the Chester Rolling-Mills was all intended for one and the same purpose, the United States cruisers, if I understand Mr. Salom correctly, and here we should expect the utmost uniformity attainable, since the government specifications appear to have confined the manufacturers within very narrow limits of variation in the physical properties of their steel. Yet the average deviation of this open-hearth steel is about seven times as great as that of the Pittsburg Steel Casting Company's lot of Bessemer steel. But apart from these two cases, I think Mr. Kent is wrong in his supposition. I think that, in very many open-hearth works, the purpose to which the steel of each heat is to be put is determined before it is cast, and the utmost attention is given to attaining the exact composition desired. The reason of this is, that it is necessary to cast the steel into ingots whose shape and size shall give with the least possible waste the plates and other pieces that have been ordered. This reason applies with much less force to Bessemer practice, since in Bessemer works the size and shape of the ingots are much more uniform in general than it is in open-hearth works; and the reason of this in turn is, that the open-hearth works put a very much larger proportion of their product into boiler and other plates that demand ingots of special sizes and shapes than the Bessemer works do.

Replying to S. T. Williams: It is hardly necessary to state that the determinations of carbon in the consecutive heats in our Bessemer works are not made by combustion. Undoubtedly the personal equation of the chemist affects the results obtained by the colorimetric method. But I fail to see that either of these considerations bears in the slightest degree on the inferences that I have here presented.

In the first place, it is not the absolute percentage of carbon to which I call attention, but the variations in the percentage; and I know nothing to suggest that these variations would be greater with the combustion method than with the color method, or *vice-versa*.

In the second place, I freely admit that, owing to inaccurate standardizing, the absolute amount of carbon may often be inaccurately found by the color method. But we are not here seeking absolute percentages, but merely the variations in the absolute percentage; and though it may sound heretical, I believe that the results obtained with one and the same standard by the color method are far more comparable among themselves than those obtained by combustion, unless the combustion is intrusted to the most skillful and careful hands. Hence I believe that, for the purposes of this paper, the color method yields in ordinary hands the more trustworthy results of the two.

In the third place, supposing the combustion method to be more trustworthy than the color method, since the same method was used both in the open-hearth and Bessemer steels, both would be affected alike, and there would be nothing to indicate or suggest that the color method should exaggerate the uniformity of Bessemer steel more than it does that of open-hearth steel.

In order to weaken my inferences by invalidating my figures, Mr. Williams must show either that Bessemer chemists are, as a class, more mendacious or have poorer facilities than open-hearth chemists; or that the chemists at the particular Bessemer works that I have selected are less trustworthy than those at the particular open-hearth works in question; and further, that their untrustworthiness lies in a direction that causes them to report their steel as more uniform than it actually is.

In point of fact, the chemists of these Bessemer works are in several instances gentlemen in whose accuracy I have the deepest confidence.

Replying to Dr. Raymond: I have no results as to the uniformity of silicon in the steel. With our present practice, if the temperature is not excessively high, and if the steel is fully blown, it is almost impossible to get any considerable amount of silicon into soft Bessemer steel, except by the utmost carelessness. As far as my observations go, 0·03 per cent is as high as the silicon is likely to be in the present way of making soft Bessemer steel; and in the very great majority of cases, it appears not to be above 0·01 per cent.

I know of no good reason for believing that the largest amount of silicon which it is posible to get into soft Bessemer steel, as it is now regularly

* Pounds tensile strength per square inch.

† Deviations of Mn have same sign, + or —, as variations of C, in every case, except 2, which are C + 0·05 Mn — 0·07 and C — 0·01 Mn + 0·33.

‡ Deviations of Mn and C have same sign in all but 3 cases, which are

$\frac{Mn}{10}$	C
— ·001	+ 0·006
— ·009	+ 0·006
+ ·011	— 0 004

§ In 19 out of the 55 heats composing the first lot of Vulcan steel the Mn was determined as well as the C. These 19 heats, though included also in the first lot, are given here as a second lot, to show how much more irregular the Mn is than the C.

made at six or more common Bessemer works in this country and at several Bessemer works with Clapp-Griffiths vessels, has any appreciable injurious effect on the steel for the purposes to which it is put, if indeed for any purposes. Under these conditions, the determination of silicon in each consecutive heat, though of scientific interest, would not directly profit the manufacturers.

Replying to Mr. G. E. Thackray: While Mr. Thackray's interesting figures certainly show with what extreme accuracy he can control the open-hearth process, they at the same time corroborate my figures and my inferences. In the examples that I presented, the soft Bessemer lots were the most uniform, the open-hearth next, and the Bessemer rail steel the least uniform; and Mr. Thackray's figures of open-hearth practice, like mine, are less uniform than the soft Bessemer, while more uniform than the rail Bessemer steel; though his open-hearth steel certainly approaches my soft Bessemer steel in uniformity very much more closely than my open-hearth steel does. The average of his open-hearth deviations (0·0052) is 41 per cent greater than the average of my soft Bessemer deviations (0·0037).* The smaller of his average deviations is 44 per cent greater than the smallest of my soft Bessemer deviations; the larger of his is 28 per cent larger than the largest of my soft Bessemer deviations. The object of my paper is, not to show that the open-hearth is irregular, but that, as carried out *in the most skillful hands*, it no longer excels the Bessemer process in uniformity, at least in making soft steels. This position Mr. Thackray's figures certainly strengthen.

DAVID VAN NOSTRAND.

David Van Nostrand, the well-known publisher of scientific books and importer of foreign works, died at his residence in this city on Monday afternoon, June 14th. He had been unable to attend to his business for a year past, and his health began to fail four or five years ago. Mr. Van Nostrand was born in this city in December, 1811. In 1826, he entered the bookstore of John P. Haven, at John street and Broadway, where he remained eight years. He then associated himself with William B. Dwight. The partnership was dissolved in 1837, and Mr. Van Nostrand was afterward employed for some time by Gen. J. G. Barnard, then directing the construction of the fortifications at New Orleans. Mr. Van Nostrand's tastes were literary and scientific, and his contact with military and professional men gave him the opportunity to indulge them. So many gave him orders for books, relying upon his good judgment for their selection, that he found the matter growing on his hands. He opened a store at Broadway and John street, opposite to that in which he had been first employed. During the war, his military publications were numerous. After its close, his specialties were scientific and foreign books. In 1869, he removed his business to its present location in Murray street. Probably no publishing house has a wider correspondence, and few have such an immense stock of valuable works. His was the first importing house to devote itself exclusively to this class of works, and so great was his success that he soon took up the labor of publishing for himself. In this field, he was equally successful, and contributed more than any one else to the rapid development of such works.

The Potash Market.—*Kuhlow's* announces that the chloride of potash manufacturers intend to propose to the syndicate shortly an increased output of carnallit. Among chloride of potash manufacturers, the question of an increase of prices is actively discussed.

The Chemische Fabrik Rhenania, Aix-la-Chapelle, has had a good year, the profits amounting to 388,141 marks, from which a dividend of 10 per cent will be paid.

The Chemische Fabrik Buckau has decided to increase the capital by issuing 600 preference shares at 1500 marks, for the purpose of extending the ammonia-soda manufactory. The report for 1885 is unsatisfactory, the net profits being only 24,801 marks. The Stassfurt works brought heavy loss, while the Buckau business had to contend with great depression in trade.

Pig-Iron Production of Germany.—The production of pig-iron in Germany, including Luxemburg, amounted in April, according to the returns of the Association of Iron and Steel Manufacturers, to 291,221 tons, against 306,856 tons in April, 1885, or 15,635 tons (5·10 per cent) less. Of this production, 137,299 tons fell to puddling and spiegel, 38,096 tons to Bessemer, 78,514 tons to Thomas, and 35,512 tons to foundry pig-iron. The production during the first four months of the year was 1,145,336 tons, against 1,242,794 tons in 1885, or 97,458 tons (7·84 per cent) less.

Glow-Lamps Filled with Hydrogen.—The *Elektrotechnische Zeitschrift* of April, 1886, says that lately the Brothers Siemens have been manufacturing glow-lamps whose glasses are filled with hydrogen. It had been remarked before that glow-lamps in which the inner glass wall had been rendered brown could be cleaned by filling them with hydrogen and then exposing both the carbon filament and glass to a high temperature. These lamps are said never to become brown at all, and to last longer. They can be used with higher electro-motive forces, and consequently under conditions considerably more favorable to economy, without diminishing their wear. It is thought that many evils that are found in the vacuous glow-lamps now in use will disappear when the carbon filament is in an atmosphere of a gas exerting considerable pressure, but not acting chemically upon it.

Princeton College Scientific Expedition.—A scientific expedition, under the direction of Professor Scott, will shortly leave Princeton, New Jersey, for the West. The main object of the expedition is to make a geological survey of the Uintah Mountains in Western Utah and Wyoming, and also to collect fossils and petrifactions for the college museum. A good part of the time will be occupied with the work in the north base of the mountains. About the first of August, the party will cross the mountains to the White River Ute Reservation, a district as yet comparatively unexplored. Many localities of great natural interest, such as the flaming gorge of the Green River, will be visited. It is expected that the expedition will be rich in important scientific results.

* Omitting, as before, the Clapp-Griffiths lot.

THE BUTTE COPPER MINES.

Special Correspondence of the Engineering and Mining Journal.

In the Boston *Commercial Bulletin*, I read that the Calumet & Hecla can make a handsome profit by selling its copper at 10 cents, while producing it at a cost of seven, and also that Arizona and Montana producers will be compelled to close if ten cents remains the price, and the market be left to the Calumet & Hecla and those Lake companies that can stand this price.

I am not in a position to speak for the Arizona producers; but as far as Montana—that is, Butte—is concerned, being conversant with the capacity of Montana producers since the first copper was shipped from here, and having been since then a close observer, I might perhaps be able to destroy this comfortable, though false, impression held, apparently, by the managers of the Lake concerns, and by other parties interested in the copper trade.

The Calumet & Hecla may perhaps compel the Parrot Company, with its small ore-reserves, and but one mine 800 feet long by 150 feet wide, to close down, by reducing the price of copper to 9 or even 8 cents, if the shareholders will allow it. But such concerns as the Anaconda or Montana Copper Company could not be compelled to close, even by reducing the price to less than 8 cents.

The Anaconda will soon be in a position, by strict economy and after completion of its new concentrating mill—which in itself is a wonder of the age, the largest in the world, and provided with the latest automatic appliances—to reduce the labor charges and to compete in the cost of producing copper with any concern in the world. At the same time, the Anaconda will be able to double its production, if forced to do so by the further reductions of the price of copper.

It is almost a certainty that the ore-bodies in sight at the Anaconda & St. Lawrence mine warrant the same production for five or, perhaps—if the 1000-foot level continues to show as large an ore-body as at present—for ten years to come. Besides, this concern could fall back on the other copper mines, indirectly controlled by it, such as Modoc, Mat, Adelaide, Wake-up-Jim, Green Mountain, and many others. Most of them carry silver, and it is only a question of time when they will be prepared to desilverize on a large scale in this country, instead of allowing the English smelters to get the profits on the work.

In my last letter, I wrote that the Anaconda plant would be enlarged by a forty-stamp mill, to work the silver ores of the surrounding silver mines, thus reducing general expenses. There is a large field left for such operations, and I believe that this is a move in the right direction, and very creditable to Manager Daly.

You may rely on it that the Anaconda can not be frozen out by the Lake companies, whatever moves they may make, or however they may surprise and demoralize the copper markets.

Neither can they do it with the Montana Copper Company, should that company decide to run. The greater part of its mine has hardly been opened and worked. For instance, in its West Colusa & Liquidator mine, the rich surface ores between the 400-foot level and the surface are almost intact, and are estimated at 500,000 tons in sight, averaging from 15 to 17 per cent of copper and carrying some silver. Should the directors follow the advice of their Butte manager, they could produce copper cheaper than any other Butte concern. For some reasons, however, due probably to the circumstance that the controlling interest is in the hands of copper dealers who have also other interests, only a little development-work is done at the Colusa mine, and most of the furnaces are lying idle. Four furnaces work some copper matte high-grade in silver, to clean up silver custom ores on hand at the plant. Altogether, about 200 tons of such matte will be made, and then these furnaces will be closed also.

In fine, I repeat that there can be no freezing out of these two companies and of some other smaller concerns here. Besides, in a year or two, fuel will cost only one half its present price. The Northern Pacific Railroad will have direct communication with Butte by the first of August, and be a strong competitor of the Union Pacific Railroad. Also, a third railroad is surveyed to Butte, and will no doubt be completed before the end of 1887. It is proposed to run the railroad north from Helena to Fort Benton, and to connect it with the Canadian Pacific, while it will extend from Helena south directly to Butte, passing the rich silver-galena mines at Boulder and Basin. The projectors of this road are wealthy capitalists

NICK.

BUTTE CITY, June 12.

Kuhlow's German Trade Review and Exporter is the name of an excellent little weekly trade paper published at Berlin, in the English language.

The German Zinc Combination has been formed. It will enforce reduction in the production of zinc. The zinc industry, which has for a long time suffered from depression—though not to any thing like the extent to which the iron and steel industries have suffered—will now, in all probability, receive a decided impetus toward prosperity. The reduction of production can hardly fail to influence prices favorably.

Foreign Coal Mine Managers for China.—It appears from a notification in the official *Peking Gazette* that the Chinese Commissioners allow that the dismissal of the foreign engineers from the Keelung coal mines—a step that was taken from motives of economy "on account of the largeness of the salaries and miscellaneous expenses"—was a mistake, the subsequent inefficiency of the working having caused a loss greater than the amount saved by dispensing with foreign assistance.

Gas Furnace for Melting Pig-Iron.—Mr. H. H. Garrett, foundry foreman of the Westinghouse Machine Company, at Pittsburg, Pa., has, it is stated, invented a gas furnace or cupola for melting pig-iron in foundries, brass, etc. A test of the former will soon be made at the Westinghouse Air-Brake Company's foundry, in Alleghany, and of the latter at the works of the Damascus Bronze Company, in this city. Special brick, etc., are now preparing for the purpose. It is hoped some time in the future to make experiments in smelting ores with natural gas.

THE PYRITES DEPOSITS OF THE ALLEGHANIES.*

By Arthur F. Wendt.

(*Continued from page* 428.)

GEORGIA.

Turning from the Ducktown ore-beds and following the strike of the rocks to the southwest, the first beds of pyrites are found in Fannin County, Georgia.

Some twenty years ago, extensive operations were there carried on. A bed of ore resembling the East Tennessee mine or the Ducktown "slate-ore" formed the basis of exploitation.

The ore-bed was over 20 feet wide, as shown by old workings now filled with water. Ruins of a concentrating plant and large heaps of siliceous tailings gave evidence of the character of the ore.

A ruined smelter, partially hid by the young forest growth, adds to the desolation of the scene now rapidly returning to its pristine wilderness. A number of other mines of no great magnitude were formerly worked in this vicinity, but even their location is now forgotten.

Pyrites from two Georgia mines has been used in the manufacture of sulphuric acid. One of the mines is that of the Tallapoosa Copper Reduction Company, in Haralson County; the other mine, that of the Paulding County Mining Company, in Paulding County. The last-named mine is on the East Tennessee, Virginia & Georgia Railroad, 30 miles from Atlanta, where the ore was burned. The ore-bed is said to be only 5 or 8 feet in width. No large amount of ore has ever been shipped, and the small dimensions of the ore-body render it improbable that the mines ever became important.

STONE HILL, ALA.

The Stone Hill beds of pyrites in Cleburne County, Ala, are the next noted occurrence of pyrites beds to the southward from Ducktown. They are reported as very similar to the East Tennessee belt of Ducktown. Two deposits are known, but only one has been at all developed. It is about 1200 feet long, and dips at an angle of 45 degrees to the east. The strike is northeast, conforming to the general rule. A slate vein is distinguished about 15 feet wide, and beyond this, mundic and pyrites are scattered through the mica-schist for from 25 to 50 feet of additional width. In 1877, Mr. R. P. Rothwell examined this property, and reports the average of the slate vein as assaying nearly 5½ per cent of copper. Forty per cent of this was selected for smelting and averaged 7·6 per cent. The remainder was dressed in a 5-stamp mill, a counterpart of those described as in use in Ducktown.

The tailings from this mill assayed 1 per cent, and an average of many analyses of the dressed ore assayed as follows:

Copper	6·81
Iron	41·38
Sulphur	30·56
Insoluble residue	21·10

A blast-furnace was tried at these works, but abandoned, owing to the trouble with iron sows. Charcoal was cheap, 5 cents a bushel; wood, $1.25 a cord; hauling to railroad, some 30 miles, $8 a ton. It is probable that large works could mine and smelt these ores for $10 a ton, or produce copper for 10 cents a pound, until such time as the rise in the value of fuel would naturally increase the cost.

No great capital was ever invested in the mines, and they are now idle.

ORE KNOB, N. C.

The Ore Knob mine, in Western North Carolina, is the first of the important pyrites deposits northeast of Ducktown. Mining was commenced about 1860. During the war, the work languished. In 1873, the property was taken in hand by a strong corporation.

Large developments were made on the mine, and a complete Hunt and Douglas leaching plant was set in operation. Owing to the failure of the leaching process, smelting-works were subsequently erected, and have remained in operation until quite recently. The mine is a very long ore-bed, with an almost vertical dip and the usual northeast strike. Eleven shafts have proved the bed over a length of 2800 feet. Extensive workings prove an average thickness of workable ore of about ten feet, varying from eight to sixteen. On the hanging or northwest wall, a glassy quartz, carrying occasional patches of purple copper, is found, precisely as in the Mary mine of Ducktown, to which mine the Ore Knob bears great resemblance in its occurrence and in the character of the ore.

Ore Knob has been repeatedly described in the Transactions of the American Institute of Mining Engineers, and in numerous private reports. The latest, a most complete description of the mine, works, and metallurgical process, has been published by Prof. Thomas Egleston. From this report and other private advices, I collate the following analysis and description. They will serve to illustrate the difference between the Ore Knob smelting practice and that of its prototype, Ducktown.

The principal difference between the ores of the Mary and Ore Knob mines is the more siliceous character of Ore Knob. Even this difference is not very marked. The metallurgical treatment of the ores is practically the same until after the smelting of the roasted first matte. From this point, the treatment differs. At Ore Knob, all second matte is returned to the roast-piles, mixed with the first matte, and again roasted. Black copper is produced as at Ducktown, but refined without the interposition of the blister smelting. In the details of the treatment, some differences and some improvements have been made at Ore Knob.

In ore-roasting, smaller piles of only 150 tons, made up of 50 tons of partially roasted and 100 tons of raw ore, and covering a floor space of 17 by 20 feet and 8 feet high, are used. The bottom is covered with fine ore, and the whole pile is thoroughly covered with fine ore, and burnt under sheds. That the large loss of copper by leaching noted at Ducktown is thereby avoided goes without saying. Time and expense are also saved. The smaller piles become extinct in six weeks, and then at once, after only one fire, yield about 90 tons of ore roasted down to seven per cent sulphur, which is sent to the smelter. Ore smelting at Ore Knob is done precisely as at Ducktown. Only one improvement has been made, and that is the use of crushed quartz for the bottom of the furnaces in place of steep. Longer campaigns result. The furnaces smelt rather more ore per day, reaching 13½ tons, owing to a larger volume of blast, furnished by a blower, and not by a blowing-engine, as at Ducktown. The lighter blast must also be some advantage in preventing ironing. Campaigns last from 40 to 60 days. Owing to the better roasting of the ore, and also to its superior quality, richer matte and a somewhat more basic slag result.

The mattes usually average 22 per cent, seldom dropping below 20 per cent. The slags run as low as 27 per cent silica, against 33 per cent at Ducktown. Copper lost in the slag is claimed to be less than at Ducktown, the analysis by Professor Egleston containing 0·57 per cent, and other analyses quoted by the managers even 0·4. There seems to be no good reason, unless it be the multiplicity of the bases in the Ore Knob slags, why copper should be lower in this more basic slag than similar slags at Ducktown. In Tennessee and elsewhere, it has been the rule that more siliceous and less irony slags are cleaner, as evidenced by the analysis of slag made from East Tennessee ore alone. Matte at Ore Knob is tapped in basins and removed in disks and then cracked, exactly as at Ducktown.

The cost of mining at Ore Knob and at Ducktown was almost identical. Considering the higher price of labor at the last-mentioned mines, that work was done with greater economy in Tennessee. In the cost of smelting, Ore Knob had not only the advantage of cheap charcoal and wood, at respectively 5 cents and $1.60, against 6⅔ cents and $3 at Ducktown; but the item of labor was also considerably reduced by reason of the compact nature of the Ore Knob Smelting-Works and their proximity to the mines. Finally, the ore smelted at Ore Knob yielded 100 pounds copper per ton against less than 80 pounds at Ducktown, a clear advantage of the value of 20 pounds of copper for every ton of ore treated.

Hence, it can not surprise that the Ore Knob works have continued in operation, and have even paid dividends until the late unexampled drop in the price of copper. In common with the other pyrites deposits that can not make their sulphur available, this property is now idle, and in the hands of a receiver.

Within the last two years, the Rio Tinto process has been introduced at Ore Knob, and some 10,000 tons of second-class ore, containing an average of 2½ per cent of copper, have been subjected to it. The receiver of the Ore Knob Company reports rather unsatisfactory results to date from the process, and lays the fault to a faulty bottom of the leaching-yard.

SOUTHWEST VIRGINIA.

The counties of Floyd, Grayson, and Carroll in Southwestern Virginia.—In Floyd County, the gossan of iron pyrites deposits has been largely used as an iron ore. Very little copper has been found, and the deposits probably have a character somewhat similar to those of Louisa County, Va.

In Carroll County, beds are found very similar to those already described. A quartz hanging-wall has here been noted, and the usual black ores were mined and smelted before the war. With the exhaustion of the decomposed surface ores, the works languished, and finally collapsed, and are now among the many abandoned pyrites mines.

The thickness of the ore beds here varies from 20 to 70 feet. Their dip is usually at an angle of 45 degrees to the south.

McCreath reports the Carroll County pyrites to assay 2½ per cent copper and 45 per cent sulphur, and the remainder iron and gangue, which agrees with the results obtained elsewhere.

LOUISA COUNTY, VIRGINIA.

Louisa County, Va., is traversed by the Chesapeake & Ohio Railroad Where this road crosses the Lower Silurian slates at Tolersville, pyrite beds have been discovered. All the beds described heretofore were found in close proximity to gneiss rock, usually 50 feet or less from the walls of the ore-body. Their age is, without doubt, Eozoic. The Tennessee mines have been so pronounced by Safford, although Whitney disputes this, and places the Ducktown ore-beds among the Lower Silurian slates. With respect to the Louisa County, Va., deposits, the writer admits the views of Whitney, but not as regards the other ore-beds. It is probably to a later geological origin that the essential differences between the Tolersville and deposits described so far is due.

The shape of the Tolersville ore-bodies is lenticular, as elsewhere. Their strike is about N. 25 degrees E., and their dip 80 degrees to the S.E. One bed, the "Arminius," has been prospected to a depth of 300 feet, and proved to have a width of at least 60 feet, and a length of probably 500 feet. Other beds have been developed north of the Arminius on the property of the Sulphur Mines Company, of Virginia. Four shafts have been sunk on this property, developing ore-bodies extending over a length of four thousand feet. The average thickness is some 18 feet; the maximum, 60. No great depth has been reached on the Sulphur Mines property at any of the workings.

In the character of their ores, these deposits vary essentially from those already described. Little or no copper is found in the pyrites, and the bulk of this pyrites is no longer a pyrrhotite, but a true pyrites or bisulphide of iron. Black oxides of inferior quality are found very sparingly below the cropping, and the sulphurets approach close to the surface, although the country-rock is decomposed to a considerable depth. On the Sulphur Mines property, iron ore was formerly mined from the gossan over a length of nearly two thousand feet.

Near the surface, and sometimes to a depth of 150 feet and more, the pyrites assumes a granular form, and can be mined without the use of powder or drill. In greater depth, the granular ore ceases, and is replaced by hard compact pyrites. Parallel with the longer axis of the Arminius ore-body, there are streaks or zones of ore that contain a very appreciable percentage of galena. The galena occurs interspersed as fine crystalline grains throughout the pyrites. Ore in quantity can be selected with one half the mass galena.

The Arminius mine was opened some ten years ago by a stock company that worked the property for a short time. Soon the rich decomposed copper ore was exhausted, and the corporation ran into debt. Finally, the property passed into private hands. For many years, operations were suspended. The mine filled with water, and even the main shaft was allowed to cave in.

Recently, a new lease of life has been given to the mine by reason of

* Reprinted from Vol. VII. of the *School of Mines Quarterly*, New York, 1886.

the gradual but certain introduction of pyrites in the manufacture of sulphuric acid. With unabated energy, the owner of this mine had for years tried to sell the ore for that purpose, and our technical journals preached the economy of the use of pyrites in place of Sicily sulphur, but until recently without avail. Only within the last three years, could manufacturers of acid be induced even to *try* pyrites. The *use* now firmly established, competition will do the rest, and force even unwilling and unprogressive manufacturers to adopt a cheaper raw material for their acid.

The Arminius mine has sold small quantities of pyrites for several years. The principal purchaser was formerly located near Baltimore. Within the last two years, the demand has quickened sufficiently to warrant the reopening of the mines, which are now in operation, and can deliver pyrites at Norfolk or Newport News at a freight rate, from the mine, of $1 a ton. From that harbor, most of the Northern ports can be reached, by sail, for $1 a ton.

Placing the cost of mining at $2, an ore containing almost 50 per cent sulphur can be laid down in New York for about $4 a ton, or 8 cents per unit of sulphur. Sicily brimstone, containing 97 per cent sulphur, sells at tide-water for about $24 a ton, or about 20 cents per unit.

Pyrites-burners can well afford to pay almost half that price, or say 10 cents per unit, and retain a liberal margin for cheaper production of acid. The oft-named drawbacks to pyrites, such as smaller produce for a given plant, greater cost of repairs, and niter, etc., are more than offset at such a price.

In the Tolersville pyrites deposit, we reach the first of those in active operation, and find these mines paying, notwithstanding their poverty in copper. As we continue our progress, we shall see that only such pyrites mines are in operation as make the sulphur profitable. The distance from railroads of the large Southern deposits is a bar to the beneficiation of the sulphur, and without the added value of this ingredient, the time has passed for the profitable smelting of any low-grade pyrites.

Of the ore shipped from the Tolersville mines, the granular ore has proved to be the richest in sulphur, and it is now practically the bulk of the ore sent to market. An analysis of 49 per cent is not unusual. The hard ore rarely exceeds 47 per cent.

The following complete analysis of Arminius ore has lately been published by Mr. W. H. Adams. It fairly represents the pyrites ore in all but its contents of lead:

Analysis by Dr. A. Volcker, of London, June, 1881.

Sulphur	48·02	Silica	7·60
Iron	42·01	Copper	none.
Ferric oxide	1·93	Arsenic	none.
Sulphuric acid	·44		

The copper-bearing portions of these ore beds contain less sulphur and more silica, and approach more nearly to the composition of the ore-beds of Ducktown and Ore Knob.

Other analyses for sulphur made by Ledoux and Ricketts from samples drawn by Mr. W. E. Hildreth gave an average of 47·43 per cent of sulphur, varying from 44·22 to 52·44 per cent. Neither arsenic nor antimony was found. Sales are made on a guarantee of 45 units of sulphur.

THE SPENCE FURNACE.

As has been stated, the bulk of the ores of these mines reaches the markets in a granular shape, and was considered objectionable for that reason until the introduction of the Spence furnace.

This furnace is a 4-hearth reverberatory, with mechanical feed and rabbles. It is in extensive use in Europe for smalls from the Tharsis, Rio Tinto, and kindred pyrites ores. Practically, the same furnace has been used for some years at the Mathiessen and Hegeler zinc-works for roasting blende. Granular Virginia ore, which is both richer in sulphur and freer from impurities than European pyrites, is very thoroughly burnt in these furnaces.

The wood-cuts clearly illustrate the construction of Spence furnaces.

The four floors, *E*, *F*, *G*, *H*, of the furnace carry the fine ore, which is charged at regular intervals and in stated quantities, through the hopper *B*, by the rod *S*, which is set in motion by movable lugs actuated by the wrought-iron frame, which carries and imparts motion to the rods *R* of the machine rabbles.

The frame is shown broken and not in full length, which equals the length of the furnace. The iron frame runs on wheels, and is set in motion by the rack *D*, actuated by a pinion geared to the reversing-engine set on the foundation *C*. The gear-wheels are omitted in the cut, to simplify it. The ore entering at *B* is evenly spread on the floor *E* by the upper rabble. Then it is transferred successively to the lower floors through the slots shown in dotted lines. Finally, it is discharged in a roasted condition *K* into the car *L*.

The acid gases escape through the slots in a direction contrary to the travel of the ore, and escape through *A* into the chambers. A rabble is shown in detail in Fig. 18. It is moved by the rods *R*, before referred to, and is supported by the wheels *Y*, running on the rails shown in the cross-section on each floor of the furnace. *X* are the prongs or teeth of the rabble, which can be replaced when worn. Depending on the speed of the engine, a furnace will treat from 3 to 5 tons a day. If not pushed too hard, sulphur in the spent ore, when treating Virginia pyrites, rarely exceeds 1·25 per cent, and is often reduced to 1 per cent.

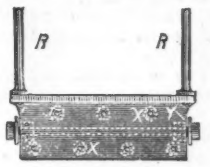


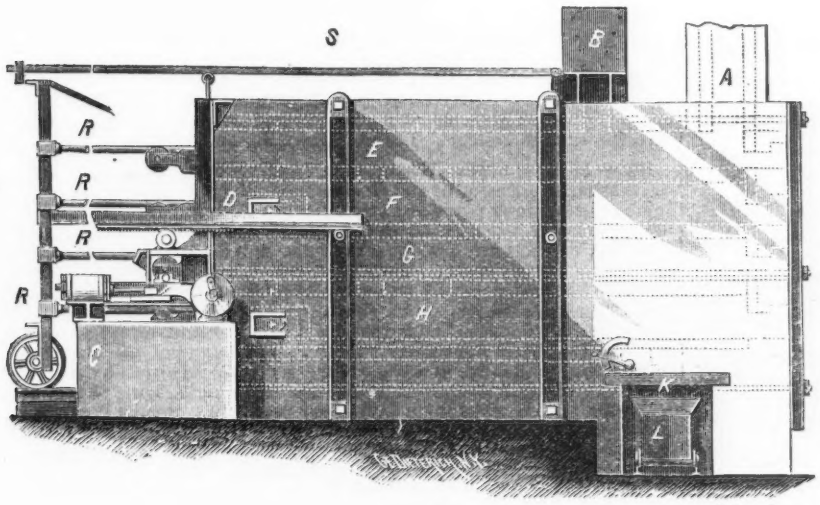
Fig. 18.

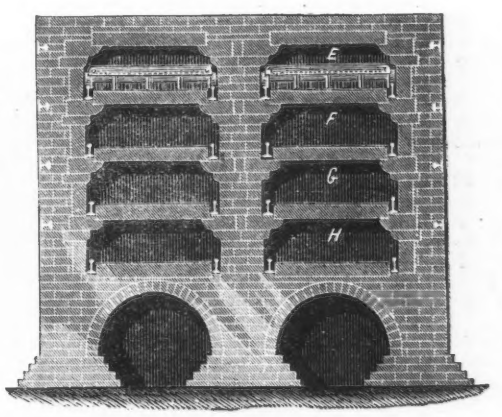
The lowest hearth of the furnace does but little work. On the one above, the sulphur in the ore is already reduced to from 8 to 9 per cent. The most active roasting takes place on the third floor.

With Spence furnaces and adequate lead chambers, 40 units of the sulphur of Virginia ores will be recovered as acid; that is, one ton of ore will make considerably over one ton of sulphuric acid. It is for this reason that it is always economical to ship pyrites to the centers of consumption of acid, rather than to ship the acid. Not only can the ore be shipped at less cost per ton, but any other valuable contents of the ore are transported practically free of cost, and can be recovered at less expense.

The Arminius and Sulphur mines of Virginia companies both have branch tracks from the Chesapeake & Ohio to their shafts, and the combined output of the properties at present is some 40,000 tons a year, which amount can, however, be readily increased to meet any demand.

(TO BE CONTINUED.)





FIGS. 16 AND 17.—THE SPENCE FURNACE.

Prices of German Steel Rails.—Krupp, of Essen, is reported to have secured a contract for 6000 tons of steel rails for Queensland at £3 12s. 6d. free at port of shipment.

Zinc Production in Silesia.—The production of the Silesian zinc furnaces during the first three months of this year was 391,280 centners, against 374,620 centners in the same period of 1885. The sale was 261,640 centners (against 272,460 centners); in value, 4,270,110 marks (against 3,542,779 marks). The production of several works that have not sent in returns is estimated at 10,900 centners.

Asparagine Solution for Electrotyping.—Dr. Gore, F.R.S., the well-known authority on electro-deposition, has, *Engineering* says, discovered that an aqueous solution of asparagine is a good medium for electrolytic baths. The solution he used was not quite saturated, and consisted of about ·88 gram of crystals of asparagine dissolved in 18 cubic centimeters of distilled water. It was feebly acid to the test paper, and was employed at a temperature of about 70 degrees Cent. Some of the liquid was more or less saturated with different metallic oxides, and the resulting baths electrolyzed by currents from one to six cells of zinc and platinum in dilute sulphuric acid. Good deposits of cadmium were thus obtained; ·23 gram of hydrate oxide of cadmium dissolved in 20 cubic centimeters of the solution, using an anode of cadmium and a cathode of copper. Zinc was deposited from ·28 gram of zinc oxide in 23 cubic centimeters of solution. Magnesium in a film was also deposited from calcined magnesia with magnesium and copper electrodes; copper was obtained from cupric oxide with copper and platinum electrodes; mercury from red mercurous oxide with platinum electrodes; and silver from oxide of silver with a silver anode and platinum cathode. In the latter case, the deposit was good, the bath consisting of ·33 gram of silver oxide in 20 cubic centimeters of asparagine solution.

THE GOOD RECORD OF THE SPRING LAKE CHARCOAL IRON FURNACE.*

By C. D. Lawton.

This furnace, at Fruitport, in Muskegon County, on the east shore of Lake Michigan, has been, from the time it first went into blast, extremely successful. It probably has the best record of any furnace in Michigan, and I do not think that the record of this furnace for the past year can be equaled by any other furnace of its size in the country. If the record was ever equaled in a charcoal furnace, the fact has not come to my knowledge.

It will be seen that the ore used did not give an extra yield in the furnace, it having been largely soft hematite—Milwaukee mine and Lake Superior mine ores

The wood used for coaling was not what would be termed extra, but was certainly good—30 per cent hemlock and 70 per cent mixed elm, beech, and sugar-maple.

The stack is 46 feet high, and the diameter of the bosh is 10 feet 8 inches—not by any means a large furnace. The limestone for fluxing was from Kelly Island. Statement of the working of the Fruitport furnace for year ended December 31st, 1885:

Days run	321
Bushels of charcoal used	1,444 675
Tons of ore used	28,684·8
Tons of limestone used for flux	386·5
Furnace charges run	57,787
Tons of pig-iron made	17,217
Bushels of charcoal per ton of iron	84
Pounds of limestone per ton of iron	50
Pounds of ore smelted per ton of iron made	3,733
Average number of gross tons of pig-iron made per day	53½
Per cent of yield of ore	60¼
Per cent of soft hematite ore used	70
Per cent of hard specular ore used	30
Size of steam-cylinders	20 inches diameter, 4-foot stroke.
Size of wind-cylinders	60 inches diameter, 4-foot stroke.
Average number of revolutions per minute	27
Average pressure of blast	3½ lbs.

There are two ovens, one on the Player plan, having 24 upright pipes, each 12 feet high, giving from 850 to 900 degrees temperature of blast The other oven is small, old style of horseshoe or U pipes, 3¼ inches by 6½ inches diameter, and 8 feet high. These give a temperature the same as the other. The average hot blast temperature is 875 degrees.

The charcoal is measured, 2748 cubic inches making a bushel. When made from dry wood, a bushel weighs 20 pounds as an average. The furnace is advantageously situated on Spring Lake, so that the ore vessels unload expeditiously in the stock-house of the furnace. The freight of the ore from Escanaba, put in the stock-house, is but 75 cents a ton; Kelly Island limestone cost, laid down at the furnace, $1.25 a ton. Freight to Chicago on the iron is 75 cents a ton; the same to Cleveland.

The company has 45 coal-kilns—20 rectangular, and 25 round ones. The former hold 80 or 90 cords of wood, and the latter 60 cords. The wood costs from $1.25 to $1.75 a cord. Wages paid, $1.25, $1.40, $1.50, and $2 a day.

The ore used in 1885 was one quarter Lake Superior mine No. 1 specular; one half Lake Superior mine hematite; and one quarter Milwaukee mine ore. The ores bought for 1886 are Coly, Lake Angeline, and Cleveland No. 1 hard ore.

From January 1st, 1885, to July 1st, 141 days, the furnace made 55 tons of iron a day, average; using an average of 80½ bushels of charcoal per ton. For the week ended April 4th, 1885, seven days, the total product was 441 tons, using an average of 68½ bushels of charcoal per ton, the ore yielding 60⅔ per cent in iron. The product runs up to 68 and even to 73 tons of iron in a day. These statistics I have taken from the books of the company myself, the books having been submitted to my inspection.

Mr. J. C. Ford, the manager, and Robert Lomeraux, the foundryman, are, it need not be said, skilled in their work.

Aluminium and Magnesium Fabrik, Patent Gratzel, Bremen.—This concern was established a year or so ago, and it has made such progress that a branch has now been opened at Hamelingen.

Increase in Russian Duties.—The Russian government has resolved to increase the import duties on copper, zinc, and vitriol from 60 to 100 copecks; on soda and potash, from 15 and 30 to 40 copecks; and on alum, from 25 to 30 copecks in gold per pood.

Silver and Lead Production in Silesia.—The production of silver during the first quarter of 1886 was 2734 kg. (against 2372 kg. in 1885); and the sale, 2754 kg. (against 2372 kg.), the value being 380,970 marks, (against 347,243 marks. The production of lead was 101,660 (against 91,280) centners; the sale, 83,080 (against 87,380) centners; the value, 1,054,595 (against 843,191) marks; of litharge, the production was 10,480 (against 8340) centners; the sale, 9920 (against 7980) centners; and the value, 100,612 (against 78,873) marks.

An Iron and Lead Secondary Battery.—Herr Kalischer has devised a secondary element of iron and lead in a concentrated solution of lead nitrate. The iron anode is passive, and, with currents not too strong, becomes coated with coherent thick layers of black peroxide of lead, which protect the iron from contact with the liquid and from decomposition. The change is completed when gas is freely liberated at the anode, and the liquid gives only a slight precipitate with sulphuric acid. To prevent lead growths between anode and cathode, amalgamated lead in contact with mercury is used. In discharging, the peroxide becomes brown and changes into monoxide, then into black peroxide. The electro-motive force is from 2 to 2·5 volts, but sinks, when the current stops, to 1·8 volts. From its solubility in nitric acid, the lead cathode must be occasionally replaced. Carbon can be used instead of iron.

Solid Oxygen.—At the Royal Institution last week, Professor Dewar exhibited the method he employs for the production of solid oxygen. Last year, the professor gave a lecture on liquid air; but although he and other experimenters had made liquid oxygen in small quantity, yet no one had succeeded in getting oxygen into the solid condition. The successful device employed at the Royal Institution depends upon allowing liquid oxygen to expand into a partial vacuum, when the enormous absorption of heat that accompanies the expansion results in the production of the solid substance. Oxygen in this condition resembles snow in appearance, and has a temperature about 200 degrees Centigrade below the freezing-point of water. A supply of this material will enable chemists to approach the absolute zero of temperature and to investigate many interesting changes in the physical properties of bodies under the primordial condition of the temperature of space.

Damascening by Electrolysis.—A method of damascening metals by electrolysis has, says *Engineering*, been brought out in France. Two copper plates are put into a bath of sulphate of copper solution, one being connected with the positive pole and the other with the negative pole of a battery. A thin layer of insulating varnish or wax is spread over one of the copper plates, namely, that connected with the positive pole, and the damascened device is etched on it. Now, since copper is by electrolysis transferred from this plate to the other plate, it follows that only the lines of the drawing can be attacked. A battery of two cells is sufficient for this purpose. When the plate has been bitten to the depth of a millimeter, it is removed from the bath and treated with hydrochloric acid, to remove traces of oxide of copper in the lines of the drawing. It is then washed with water and suspended in a bath of nickel and silver and connected with the negative pole of the battery. The positive pole now consists of a plate of platinum. The silver or nickel deposits wherever the copper has been attacked, and the depressions are soon filled with the foreign metal. The plate is then polished, and looks like one that has been damascened by hand.

Imperial University of Japan (Teikoku-Daigaku).—This institution, founded by imperial decree No. 3 of March 1st, 1886, includes the two institutions formerly known as the Tokyo University (Tokyo Daigaku) and the Imperial College of Engineering (Kobu-Daigakko), these institutions having ceased to exist. The University comprises five colleges, each with its own director, and at its head is the president. The University officers are: President, Hiromoto Watanabe; Secretary, Kiuichiro Nagai. The director of the College of Law (Hoka-Daigaku) is the President (*ex officio*); the College of Medicine (Ika-Daigaku), Prof. Hiizu Miyake; the College of Engineering (Koka-Daigaku), (Acting) Prof. Dairoku Kikuchi, M.A. (Cantab.); the College of Literature (Bunka-Daigaku), Prof. Masakazu Toyama; the College of Science (Rika-Daigaku), Prof. Dairoku Kikuchi, M.A. (Cantab.). All communications to the Imperial University, whether on its own behalf or as the representative of the two above-mentioned institutions now defunct, should be addressed to the president; communications to the colleges, to the director of each college. Dated, Tokyo, Japan, April 15th, 1886.

Glow-Lamps under Water and in Explosive Mixtures.—A very interesting application of the electric incandescent light to mining operations recently took place at Lord Vernon's Poynton and Worth Colliery, near Stockport. It appears that the lower pump-rod of the main pumping-shaft of the Lady Pit, by which the pits are drained, broke, leaving the bucket in the bottom some 600 feet below, and submerged in water. To remedy the rupture, divers were employed from the firm of Siebe, Gorman & Co., the well-known submarine engineers of Westminster, and their operations were carried on by the light of a Siebe diver's electric lantern worked by Thame's primary battery. The barrel of the shaft was disjointed and pulled up, and the pump-rod was repaired by this means. The Siebe lantern is a strong appliance and weighs some 83 pounds out of water. It consists of an iron cover permitting the conductors to pass inside to a cluster of four incandescent lamps, the light of which is reflected downward by a white reflector in the roof. A stout glass globe encircles these, and is protected from injury by iron prongs around it. Fifteen cells of Thame's primary battery were employed, and the total light obtained was about 80 candles, a luminous sphere of some 6 feet in radius being obtained under water. We may add that Mr. Thame has designed a small hand lamp supplied by four cells of his battery, within the lantern, which is now used in the ether chambers of brewers. It is of the utmost importance that this lamp should be safe and free from any liability to cause explosion of the ether. It is carried into the chamber by the operatives; and *Engineering* says that Colonel Majendie has expressed his approval of the lamp for use in gunpowder works and magazines.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

GRANTED JUNE 8TH, 1886.

343,181. Process of Calcining Gypsum. Edward W. Marsh, Bridgeport, Conn., Assignor to the Fort Dodge Gypsum-Stucco Company, Fort Dodge, Iowa.
343,182. Manufacture of Hydraulic Cement. Henry Mathey, New York City, Assignor to José F. Navarro, same place.
343,183. Manufacture of Hydraulic Cement. Henry Mathey, New York City, Assignor to José F. Navarro, same place.
343,184. Manufacture of Hydraulic Cement. Henry Mathey, New York City, Assignor to José F. Navarro, same place.
343,241. Wet-Ore Concentrator. Joseph Hubert, San Francisco, Cal.
343,246. Pipe-Coupling. William D. Lee, Pittsburg, Pa., Assignor to Thomas E. Unks, same place.
343,268. Rock-Crusher and Pulverizer. Hugh J. Dykes, Berkeley, Assignor, by mesne assignments, of one half to Lewis Peterson, San Francisco, Cal.
343,317. Chemical Engine. Henry A. Hutson, Chicago, Ill.
343,325. Machine for Rolling Tubes. Edgar Little, Philadelphia, Pa.
343,346. Coal-Mining Machine. Samuel B. Stine and James V. Smith, Osceola Mills, Pa.
343,359. Gas-Regulator. Michael J. Berry, Bradford, Pa.
343,390. Method of Drawing Sheet Metal. Archibald W. Paul and George F. Butters, Wheeling, West Va.; said Butters Assignor to said Paul.
343,446. Apparatus for Manufacturing Carbon-Black. John T. Dysart, Shippensville, Pa.
343,448. Converter for Making Bessemer Metal. Henry L. Gantt, Baltimore, Md.
343,466. Rock-Drill. John B. Maas, Humboldt, Mich.
343,472. Clay-Tempering Machine. Frank Middleton, Richmond, Va.
343,497. Water-Cartridge for Blasting. Miles Settle, Bolton, County of Lancaster, England.
343,524. Method of Manufacturing Heating and Illuminating Gas. William F. McCarty, Philadelphia, Pa., Assignor to Jane Logan, Hagerstown, Md., and Adolph Ohl and Bernard C. Lauth, Philadelphia, Pa.
343,525 Apparatus for the Manufacture of Gas. William F. McCarty, Philadelphia, Pa., Assignor to Jane Logan, Hagerstown, Md., and Adolph Ohl and Bernard C. Lauth, Philadelphia, Pa.
343,559. Chill for Use in Casting Metal. Joseph J. Carr, Wilkes-Barre, Pa.

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* From C. D. Lawton's *Report on the Mines and Mineral Interests of Michigan*, now in press.

FURNACE, MILL, AND FACTORY.

The contracts for wire rope for the Melbourne, Australia, street roads, have been given to John A. Roebling's Sons, of Trenton, New Jersey. This is another demonstration of the fact that American goods can, through superior quality, command foreign markets in competition with European goods made with cheaper raw material and cheaper labor.

The contract for G blast-furnace at the Edgar Thomson Steel-Works, at Braddock, Pa., has been let, and the furnace, as also the F furnace, will be pushed to early completion. This will give seven furnaces at the works. The new ones will be the same size as the old ones, 20 feet bosh by 80 feet high, and will have a capacity of 200 tons each twenty four hours. The object in putting up the new furnaces is to have an aggregate capacity sufficient to work the Bessemer converters on the direct process, doing away with the use of cupolas for melting purposes. Although the aggregate capacity will exceed that of the converters, there will be a proportion of the metal unfit for direct use, which will be cast into pig for use in the steel mills at Homestead. Also any metal not fit for steel will be cast into pigs and used for making iron. By this system, no cupolas will be in use at the Braddock works but those used for carbonizing the steel.

It is stated that the United Wire Company, of Joliet, Ill., to which we referred last week, is a pool in which all the barb-wire manufacturers in the country have joined, except those of Pittsburg and Buffalo, to protect the trade. It is anti-Washburn.

The Consolidated Barb-Wire Company has been organized at Joliet, Ill., with a capital of $200,000, combining a big wire-drawing plant and an extensive barb-wire factory.

It is stated that a company has been formed in Nashville, Tenn., with Dr. William Morrow and ex-Governor Marks at its head, to erect two blast-furnaces in Sequatchie Valley about thirty miles from Chattanooga. A contract has been made with the Nashville & Chattanooga road to build a line to the site of the new plant.

Jones & Laughlin's entire establishment, at Pittsburg, Pa., was closed down on the 14th inst., for the first time in some months. Not a wheel is turning, and it is stated that the natural gas connections are so badly impaired by the recent foundry fire at the mill as to compel a general repair. An investigation of the cause of the fire is in progress.

The Western Nail Association held a meeting in Chicago on the 16th inst. No change was made in prices, the rates offered in the puddlers' scale by the Amalgamated Association not having been agreed upon.

The M. C. Bullock Manufacturing Company, of Chicago, Ill., reports recent shipments as follows: One Little Champion diamond drill, with complete outfit, to the City of Mexico. One Climax diamond drill, with complete outfit, for underground prospecting, to the Lake Superior Iron Company, of Ishpeming, Mich. (This makes the third Bullock drill purchased by this company.) One straight-line engine to Carson, Pirie, Scott & Co., of Chicago. (This is the third straight-line purchased by this firm.) One Little Champion diamond drill, with outfit, to the Hudson River Ore and Iron Company, at Burden, New York. One special Lane's patent portable hoist, for a silver mine in South America.

The W. S. Tyler Wire-Works Company, Cleveland, Ohio, is enlarging its plant of machinery with the view of increasing excellence and the greatest possible economy in construction and handling. The improvements, when completed, will double the present large capacity of the works.

The Brown Hoisting and Conveying Machine Company, of Cleveland, Ohio, has received an order for a plant at Fairport, Ohio, to consist of nine bridge tramways of 180-foot span each, fully equipped for handling ore and coal. The plant, when completed, will be capable of handling from 6000 to 7500 tons a day of ten hours. Mr. Alexander Brown has designed a cantilever derrick with a 140-foot boom, which is an adaptation of the Brown hoisting and conveying system, for the handling and loading of rock on the Pacific Phosphate Rock Company's property. One derrick equipped with the Brown hoisting and conveying machine will handle the rock as fast as two steamshovels can strip the vein.

Mason Evans and J. B. Cornell have been appointed receivers of the Nimrod Furnace Company, of Youngstown, Ohio. Nearly two years ago, mortgages were given by the company, amounting to over $130,000, and since then, judgments aggregating $50,000. It is doubtful whether the plant, which consists of two furnaces, one now in operation under lease to the Brier Hill Iron and Coal Company, would sell for enough to pay half the indebtedness.

The Middlesex Rolling-Mill, owned by the Wheeler Iron Company, of Sharon, Pa., has been sold to a syndicate of New York and Pittsburg capitalists, which will convert the works into an extensive plant for the manufacture of steel. The process to be used is the graphite patent. This will be the first exclusive steel mill in the Shenango Valley.

LABOR AND WAGES.

The striking miners of the New River mines, in West Virginia, have resumed work this week at the old rate, 40 cents a ton. The strike has lasted six weeks.

The coke operators and representatives of the miners and coke-drawers of the Connellsville region, at their meeting at Scottdale, Pa., on the 14th inst., amicably settled difficulties that have been pending since June 1st. The demands were all conceded except the semi-monthly pay and the placing of scales at the pit-mouth. The new system of payment will increase the wages very little, but will establish a fair and equitable basis. The outcome of this meeting will result in the establishment of a permanent conciliation board, and strikes will be of less frequent occurrence. The works are in full blast again.

At Washington, Pa., on the 15th inst., the coal miners who in the great strike in the Monongahela Valley last fall assaulted and beat non-union men were sentenced to undergo eight months' imprisonment in the Alleghany County Workhouse.

The strike at the Pennsylvania Tube-Works, Pittsburg, Pa,, has been amicably settled, and work resumed in all departments this week.

The conference committee of the Iron Manufacturers signed the scale of the Amalgamated Convention at Pittsburg, Pa., on the 16th inst. The matters not included in the scale as signed are the nailers' scale and the scale for the roll-turners. It was agreed in the conference that conside ation of the nailers' scale be postponed until June 23d, when it is expected it will be satisfactorily settled. The roll-turners' scale is left in the condition it has been in the past, though it was agreed on both sides that the matter should be included in the scale worked at the conference next year. The scale as signed is that of the present year, namely, $5 a ton for puddling iron based on a two-cent scale for selling. The scale as signed is said to be satisfactory to the workers and manufacturers alike. None of the Youngstown mills was represented at the Pittsburg wages conference, which ended last night with the signing of the iron-workers' scale by the manufacturers' committee. The scale is practically the same as was adopted last year, and a strike here is considered improbable. The Mahoning Valley mill men will confer with representatives of the Amalgamated Association of Iron and Steel Workers at a special conference, the date of which has not been set. The Bonnell & Co. mills, the largest in the district, employing over 2000 men, can not sign the scale, because the works are in the hands of a receiver. Manager Williams, of their works, said to-day that the new scale was unobjectionable to them. It is probable that the other mills will sign.

The annual convention of the Miners and Laborers' Amalgamated Association of Pennsylvania opened on the 15th inst. at Altoona, and was in session three days. The establishment of a defense fund was recommended by a committee. A fund is established by it that shall be used in case of strikes. Strikes will be ordered only when all other means of labor obtaining redress have been exhausted. The adoption of the eight-hour system was recommended to be kept up.

TRANSPORTATION NOTES.

The Shickshinny & North Mountain Railroad will be pushed to connect at Millville, Columbia County, Pa., with the new line running to Milton. The road will open up a section of the State now without any railroad, and which is rich in timber, iron ore, and limestone, while in farms it is one of the richest portions of the State. The road will connect at Mocanaqua with the North & West Branch Railroad of the Pennsylvania system.

The Philadelphia & Reading Railroad Company will begin on the 21st inst., it is stated, the shipment of anthracite coal to Baltimore, Washington, and other Southern points over the Wilmington & Northern Railroad, from a connection with its main line in Wilmington, Del., and thence southward over the Baltimore & Ohio lines. The first consignment will consist of nearly 200 cars, all of which has been placed, and the through rate of freight has been fixed at $1.75 a ton. This is lower than the rate of the Pennsylvania Railroad Company, but it is understood that the latter will meet it, and that there will be an active anthracite coal war between the companies in Baltimore and Washington and points South.

The labor troubles have caused the Pennsylvania Railroad Company, it is said, to cancel plans for nearly $1,000,000 of improvements that were to be carried on this year. This includes a handsome passenger station at Harrisburg, and extensive coal wharves in Baltimore.

COAL TRADE NOTES.

ILLINOIS.

At a depth of 701 feet, the Odin Coal Company, at Odin, has struck a seven-foot vein of coal. There are now four coal mines in Marion County, with two more to hear from.

The first evidences of coal were discovered, at the depth of 120 feet, by the Clinton Mining Company, at Clinton, on the 9th inst.

In the suit of Lawrence Leonard against the Niantic Coal Mining Company for $10,000 for damages received while lowered in a cage at the shaft, which has been on trial in the Circuit Court at Decatur, the jury agreed upon a verdict in favor of the plaintiff, but the amount of damages could not be learned, as the verdict is sealed.

OHIO.

In a short time, the coal will be taken out and the Church Hill mine, near Youngstown, will be abandoned, after about thirty years' working by the Church Hill Coal Company.

PENNSYLVANIA.

ANTHRACITE.

The extension of the big Dorrance shaft of the Lehigh Valley Coal Company, in Wilkes-Barre, from the Hillman vein to the Baltimore seam, is pushed at a rapid rate. Coal is now taken from the Hillman vein at a depth of 585 feet, and the Baltimore lies beneath this vein 400 feet. The sinkers have attained a depth of 70 feet below the Hillman vein. The work will probably require nearly one year's time for completion.

The stockholders of the Union Improvement Company, at a recent meeting, voted to decrease the capital stock one half from $583,000 to $291,500. The company owns coal lands in Luzerne County that are operated by tenants, and, as money has accumulated in the sinking fund, it was deemed expedient to reduce the value of the capital from $50 to $25 a share.

Every thing is in readiness for the erection of the new breaker at the Alaska Colliery at Mount Carmel, operated by the Philadelphia & Reading Coal and Iron Company. The structure will be partly of iron, and will cost $150,000. It will have a shipping capacity of between 30,000 and 40,000 tons a month. It is the intention of the company also to erect a jig-house, and prepare for market the refuse coal of the Trevorton, Shamokin, and Mount Carmel districts.

The squeeze in No. 2 shaft of the Susquehanna Coal Company at Nanticoke, to which we referred in our last issue, was reported on the 14th inst. as not yet overcome, although a large force has been engaged continuously for the past ten days in the attempt to make the mine safe, so that the work of production can again begin. This is the worst crush of this kind that has ever occurred in these mines, and it is only the great distance between the affected portion and the surface that has prevented a serious wreck of many properties. The damaged portion can be so firmly secured, however, by means of propping, that no other danger is anticipated. There have been no further surface indications of the trouble than those heretofore reported.

The Philadelphia & Reading Coal and Iron Company has completed the new shaft at Locust Gap. No. 8 vein was struck on the 12th inst., and, with the completion of the tower and engine-house now build-

ing, the shipments of Locust Spring and Locust Gap collieries will be largely increased.

BITUMINOUS.

The work of surveying the large tract of coal land recently optioned by Schoonmaker & Co. in Mount Pleasant township has been completed. It contains almost 1400 acres of the best coal in the region. The price per acre was $135, for all except the tracts of Mike Rumbaugh, Jr., and the Miller heirs, the former receiving $200 for the coal and $4000 for forty acres of surface, while the latter got $875 for five acres of surface and coal. The option that the company has on these tracts expired on the 12th inst. The terms of sale are one third down, one half of the remainder in one year, and the rest in two years.

The old Blythe pit, across the river from Suter station, which has been idle for some years, has been opened by W. L. Scott, the present owner.

The Barclay Coal Company's income from rent of railroad and royalty on coal for the month of May was $6316, compared with $6929 in May, 1885.

GAS AND OIL NOTES.

Exports of refined, crude, and naphtha from the following ports, from January 1st to June 12th :

	1886. Gallons.	1885. Gallons.
From Boston	2,308,129	3,489,029
Philadelphia.....	58,256,389	54,653,892
Baltimore	5,111,161	4,151,986
Perth Amboy.....	1,593,770	... ...
New York.....	169,300,303	158,846,036
Total exports	236,569,752	221,140,243

The Chief of the Bureau of Statistics reports the total values of the exports of mineral oils from the United States for the month of May, 1886, and during the eleven months ended May 31st, 1886, as compared with similar exports during the corresponding periods of the preceding year, as follows : May, 1886, $3,828,311 ; May, 1885, $4,481,032 ; eleven months, ended May 31st, 1886, $44,910,213 ; eleven months, ended May 31st, 1885, $45,225,965.

The Royal Gas Company has just completed at Hickory, sixteen miles from Steubenville, the largest gas well ever opened in the field. This is a Philadelphia company, and has lines about completed at Steubenville, Wellsburg, and Mingo. This is the company's third well.

EGYPT.

From reports received at the State Department at Washington in regard to the discovery of oil in Egypt, we learn that Mr. Daley, a Belgian engineer, has made a full examination and report on the recently discovered oil fields in the region of the Red Sea. The whole peninsula of Gimsah, where the oil was discovered, is of volcanic structure, and there is not the slightest trace of either vegetation or fresh water to be found. The first borings were made at a distance of only 400 feet from the sea, and at a distance of only 156 feet from the surface a perfect fountain of petroleum was struck. It overflowed and flooded the neighboring regions. It is estimated that 3200 barrels of the liquid came forth in twenty-four hours and continued at the same rate. The petroleum is of a dark-greenish color and limpid. It is mixed with salt water, and discharges gas. By allowing the fluid to rest for a few hours, the salt water settles and can be removed. Analysis of the crude oil shows that it contains from 22 to 25 per cent of pure oil. The country around the wells is wholly uninhabited and nearly uninhabitable from the absence of drinking water and vegetation. All provisions must be brought from Suez. The climate is salubrious, however, and the frequent northwest winds render the heat less insufferable. Already steps have been taken to fully develop the new industry. The Egyptian government is disposed to do every thing necessary. Jetties have been begun, so as to allow vessels to load at the wells, and the crude oil will be taken to Cairo for refining.

INDIANA.

The excitement over natural gas prospecting in this State has resulted in the organization of fully fifty companies for the purpose of sinking wells in different parts of the State. The first of these companies to strike gas was one that has been forming near Lexington, where, on the 7th inst., at a depth of 167 feet, a vein was opened. The vapor was immediately ignited, and a flame twenty-seven feet high is reported to be still burning.

OHIO.

Gas drillers at Akron, on the 17th inst., at a depth of 2400 feet, struck what is supposed to be a great lake of strong salt water into which a heavy iron sounder was lowered 1000 feet without reaching bottom.

The Ramsey Gas and Oil Company has been formed at Youngstown, to drill for gas and oil in Mahoning County. Three thousand acres of land have been leased near Austintown, on what is known as Raccoon Ridge. Erecting a derrick for the first well has begun. A large tract of land contiguous to that already leased is under consideration, and will be leased. The distance from this city to the leased territory is only four miles. Wells will be drilled 3000 feet before they are abandoned.

The test well at Salem has been abandoned at a depth of 3000 feet, where they struck lime rock. They found no third sand, but had a slight show of oil in the first and second sands.

PENNSYLVANIA.

The Philadelphia Company is drilling twelve new wells in the Murrysville region, and the Wheeling Natural Gas Company eight new wells in the Hickory field. J. M. Guffey & Co. have secured the leases of 18,000 acres of supposed gas territory in Westmoreland and Indiana counties, and contracted for three test wells, one at White station, two miles from Saltsburg, and another four miles west of the town of Indiana, both being on the Grapeville anticlinal.

GENERAL MINING NEWS.

CALIFORNIA.

BUTTE COUNTY.

An important project for drifting out rich gravel in a flooded mine is to be put to a practical test at Oroville. The process is similar to that successfully used in sinking foundations for bridges. The men will pass down through an air-lock into the tube or caisson, at the bottom of which they will work out the gravel.

MONO COUNTY—BODIE DISTRICT.

BULWER.—The official report for the week ended the 7th inst. shows that the main ore-chute from the 200-foot level has been cleaned out and repaired, and is now filling with ore from that level. Work was resumed on the south drift, 400-foot level, and the ledge is strong in the face, with the size and quality of ore unchanged. A dispatch, received at this office on the 17th, states that crushing ore at the mill has begun ; machinery running well.

CANADA.

PROVINCE OF NEW BRUNSWICK.

LAKE GEORGE ANTIMONY COMPANY.—This company's works at Prince William, York County, were burned on the 12th inst. All the principal buildings were destroyed. The loss reaches far into the thousands. There is no insurance.

PROVINCE OF NOVA SCOTIA.

A fair start has been made toward the formation of a mining association. Messrs. W. L. Lowell & Co., of Halifax, can give further information on the subject.

COLORADO.

ARAPAHOE COUNTY.

AKRON MINING AND REDUCTION COMPANY.—This company has been incorporated by R. C. Jacobs, Robert Linn, Monroe Seiberling, Frank Adams, A. C. Gutle, E. B. Miller, and Frank H. Adams, with a capital stock of $2,000,000.

CHAFFEE COUNTY.

SILENT FRIEND.—Active developments continue at this mine, which is worked from the old incline by four levels, and an open cut with incline, all showing increase of ore-bodies as depth is gained. The best ore, all lead sand, is in the lowest part of the workings in the incline. The cut is 55 feet in now, a tunnel on the trend of the vein. The distance from this to the cross-cut of the fourth level in the lower incline is about 200 feet, all ore. The ore in the fourth level averages 8½ ounces silver, ·04 gold, and 51 per cent lead, neutral in iron and silica. In the incline from the cut-out of the tunnel above, the strictly lead ore runs 10 ounces silver, 55 gold, and 49 per cent lead. It is stated that, as the ore will not be immediately needed by the Holden Sampling Company, of Denver, no shipments will be made at present. The mine is owned by Mr. Holden.

CLEAR CREEK COUNTY.

FREELAND.—Official advices show the production for May to have been : Gold, $23,715.88 ; silver, $4969.57 ; copper, $174.76 ; making a total of $28,860.21.

PLUTUS.—The production for May has been, as by official advices : Gold, $7531.86 ; silver, $4252.38 ; copper, $105.86 ; total, $11,890.10.

DOLORES COUNTY.

GRAND VIEW.—The works were to start up on the 15th inst.

HINSDALE COUNTY.

CROOKE MINING AND SMELTING COMPANY.—The Ute and Ulé mines at Lake City, which were recently sold in New York City, will be worked again by the new owners as soon as the proper arrangements can be perfected.

LAKE COUNTY.

From the Leadville *Herald-Democrat* we take the following :

BOREEL.—This company, which owns the Gonebrod mine, will soon resume work.

COLONEL SELLERS.—Two of the four bodies of the unfortunate miners covered in the cave of this mine were recovered on the evening of the 11th inst. At the mine, some experiments have lately been made that warrant the belief that the large dump of low-grade mineral on the premises can all be concentrated at a profit.

CRESCENT AND CATALPA.—These mines, on Carbonate Hill, are yielding rather better than for some months past. The lessees of the eastern portion of the Crescent lode lately disclosed a fair streak of sand ore, which has since developed quite satisfactorily. The newly discovered ore-body promises to be equally divided between the Crescent and Catalpa lodes. The chute, as far as opened, shows a width of from 30 to 40 feet, and a thickness of from 6 inches to 3 feet. Work by lessees in other portions of these properties continues.

MANSFIELD GROUP.—This company has been incorporated by David B. Gould, George D. Capen, and William G. Shedd, with a capital stock of $5,000,000, to work four or five locations situated on Printer Boy Hill, between the Crown Point and Pinnacle mines on the west, and the Florence on the east. The sinking of a shaft will begin at once.

SMALL HOPES.—The company has decided to vigorously press existing exploration-work. The Blaine shaft, situated on the northeastern portion of the consolidated claims, and now down 245 feet, is to be put down as rapidly as possible, as the ore in the most northerly workings is very rich, and dipping directly toward this new shaft. Mineral is expected to be encountered at a depth of from 275 to 300 feet. Work in the Result shaft, situated on the southeastern portion of the property, is also to be advanced, and the drifts now extending from the foot of the shaft are to be rapidly driven in all directions in the contact. The principal work of the company, however, will be the sinking of the Robert Emmet shaft, situated just above the Stray Horse Gulch road. This shaft is already down between 200 and 300 feet, and discloses the upper contact. It is now to be sunk in search of the eastern continuation of the ore zone disclosed in the Brookland and Maid of Erin mines. This contact can probably be reached at a depth of from 600 to 700 feet.

TERRIBLE.—The lessee of the ground contiguous to the Ward shaft has lately disclosed a four-inch streak of ore running 400 ounces in silver to the ton. Should this seam of ore prove profitable, the shaft will doubtless be sunk to greater depth. Six other lessees are working on the property and extracting a fair amount of ore.

SAN JUAN COUNTY.

NORTH STAR.—A small pocket of ore, assaying high in gold, was struck 600 feet from the cross-cut tunnel. The mine has been for years a heavy producer of medium-grade silver ore, carrying a small quantity of gold, but this is the first gold pocket that has been struck.

SAMPSON.—The personal property of this mine, consisting of safe, scales, tools, furniture, etc., was sold at Silverton, on the 5th inst., at sheriff's sale, to satisfy two judgments amounting to about $300. The company's attorney bid it in for the amount of the judgments.

SOUTHERN COLORADO BISMUTH AND SILVER MINING COMPANY.—The case of A. M. Jackson *vs.* the Southern Colorado Bismuth and Silver Mining Company was tried in the District Court at Silverton, and a judgment rendered in favor of Mr. Jackson in the sum of $1815. Notice of a motion for a new trial has been given. F. C. Sherwin got judgment by agreement against the said company for $436.

SUMMIT COUNTY.

ROBINSON CONSOLIDATED.—Draining this mine began on the 8th inst., and will occupy two weeks. The accumulated surface water fills the incline from the 800-foot level to the bottom, which is 1600 feet from the surface.

DAKOTA.

LAWRENCE COUNTY.

CALEDONIA.—The product of bullion for May was $15,173.20. The official report for the week ended June 7th shows that half of the mill was idle four days last week, owing to the inability to get at the ore. The south drift on the 425-foot level has been stopped for the present. The drift from the bottom of the winze advanced 3 feet, making a total of 23 feet. It shows up a much better grade of ore, for the last 4 or 5 feet, than heretofore; it is now worked by contract at $20 a foot. A stope has been opened on the west vein on the 425-foot level, 30 feet wide from the hanging-wall. This stope shows good milling ore. The condition of the mine is such that they are compelled to leave the most available places for getting ore until new openings can be made to the ore, or until they can bring it down by cave. The cave ore that was running they have stopped, owing to a great quantity of waste coming down with it.

CHALLENGE.—This company has been organized to work the Challenge mine, on Spruce Gulch, and has purchased the Noble Grand twenty-five stamp mill. The mine is well developed. The mill is distant one half-mile. It is the intention of the company to thoroughly renovate the mill, put in rock-breakers and self-feeders, and push active operations.

FATHER DE SMET.—The mine is not worked. The cause for this has not been stated.

IDAHO.

BANNOCK GOLD AND SILVER MINING COMPANY.—At the annual meeting, held in Salt Lake City on the 7th inst., the following officers were elected to serve during the ensuing year: John A. Groesbeck, Trustee and President; William Groesbeck, Trustee and Vice-President; M. C. Horn, Trustee and Secretary; David James, Trustee; W. S. McCornick, Treasurer. An assessment of fifty cents a share was levied on the capital stock, payable immediately. The money will be spent in building a mill.

ILLINOIS.

VOLANTE GOLD MINING COMPANY.—This company has been organized at East St. Louis, with a capital of $1,000,000; incorporators, Gustave H. Lippett, Jr., James McLure, and L. Frankattofy.

MAINE.

HANCOCK COUNTY.

CAPE ROZIER.—This copper mine, at Cape Rozier, started up some weeks ago. The mine has been drained. The miners have taken from No. 2 shaft about thirty tons of very fine zinc ore, and sunk No. 1 shaft ten feet. Sinking goes on without interruption. The company intends to put a crew in No. 3, and work it for zinc, there being quite a body in sight at the present time. No. 1 shaft is to be sunk 600 feet, if paying ore is not struck before. Recently, copper has been coming up next the vein matter.

MICHIGAN.

DUNCAN LAND AND MINING COMPANY.—At a recent meeting, a resolution was adopted fixing the minimum price at which the company would sell its lands—something over 22,000 acres—at $250,000. The board of directors was directed to grant options, leases, and sell lands, etc.

COPPER MINES.

The following statement gives the products of the mines mentioned for May, and for five months, and a comparison with the outputs of the same mines in the two preceding years:

	May.			Jan. 1 to May 31.		
	1886. Tons.	1885. Tons.	1884. Tons.	1886. Tons.	1885. Tons.	1884. Tons.
Calumet & Hecla	2,605	2,641	2,354	12,468	12,199	10,637
Quincy	261	250	265	1,097	1,022	1,126
Franklin	202	190	179	1,014	922	877
Tamarack	200	...	...	951	....	..
Osceola	172	157	211	810	890	1,047
Atlantic	181	215	192	946	971	891
Huron	100	115	71	576	577	360

KEARSARGE.—At a meeting just held, it was voted to increase the capital stock to $1,250,000, or 50,000 shares. The company will retain 10,000 shares in its treasury, and 20,000 shares will be distributed *pro rata* to stockholders who have paid the assessment of May 1st. The Hancock & Calumet Railroad will be extended to the Kearsarge, and, later, up the range to the Allouez. The surface indications at the Kearsarge are very promising, and the early workings are decidedly encouraging. The work of sinking No. 2 shaft has begun, and it has already been "collared," and work begun on the adit level.

GOLD MINES.

ROPES.—This company produced, during May, gold valued at $3160, and silver at $340; a total of $3500.

IRON MINES.

Owing to the discovery of Bessemer ore at the Sheldon & Shafer mine, several new explorations are under way, and there is a marked resumption of life in the mining region about Crystal Falls. The ore is of the hard variety, and the finest yet found on the Menominee range. This ore assays 66·76 per cent iron and only ·037 phosphorus, it being about the only Bessemer ore yet found in that part of the range.

The following statement, given by the Marquette *Mining Journal*, shows the amount of iron ore shipped from the ports of this district for the season of 1886, up to and including Wednesday, June 9th:

	Tons.
Marquette—Marquette District	169,733
St. Ignace	13,813
Escanaba—Marquette District	120,055
Menominee District	191,768
Grand total of lake shipments	495,369

Shipments of Pig-Iron.

Pioneer furnace	530
Deer Lake furnace	225
Vulcan	4,072
	4,827

The gain over the shipments from the above ports during the same period of 1885 is 159,411 gross tons.

NEW BARNUM.—It is rumored that the workings of this mine, at Ispheming, will be closed down until some of the ore and pig-iron have been sold. There are now in stock at the furnace about 20,000 tons of pig-iron, while at the mine are stocked about 45,000 tons of ore, all of which remains unsold. The opening of the mine has been an expensive undertaking, the shafts being deep and partly in ground that was a quicksand and hard to conquer. The new hoisting-plant and other machinery have also drawn heavily from the company's surplus.

MINNESOTA.

ST. LOUIS COUNTY.

MINNESOTA IRON COMPANY.—During the season of 1886 and for the week ended June 9th, there were shipped from Two Harbors 33,031 tons of ore, from this company's mines.

MONTANA.

LEWIS & CLARKE COUNTY.

MONTANA, LIMITED.—The product for May is reported to have been 3200 tons, which brought $146,500.

SILVER BOW COUNTY.

HOMESTAKE GOLD AND SILVER MINING AND MILLING COMPANY.—This company has made an assignment to Joseph A. Hyde. The liabilities are not known; but the assets are a bond on the Kittie J. O'Brien mine and various tools and mining machinery used in developing it. The mine was bonded by the company named, organized for the purpose of developing and proving the value of the Kittie O'Brien. The mine is some ten or twelve miles southeast of Butte. It is said to look well.

MONTANA COPPER COMPANY.—According to reports, four furnaces of this company will be started up under lease. The lessees will have sole management of the works, and have contracted to run them principally on high-grade silver ore, which will be mixed with a proportion of copper ore from the Montana Company's mines, thus producing a copper-silver matte assaying high in silver. It is understood that a contract has been concluded with the company for the production of 300 tons of such matte. The run will be somewhat experimental in its nature, and is intended to demonstrate the advantages of working copper and silver ores together.

MOULTON.—It is reported that this company has purchased six sixteenths of the Poser mine from A. W. Bernard for $20,000. The Poser is on the great Rainbow vein, east of the Magna Charta, adjoining the Elm Orlu. The Moulton previously owned nine sixteenths of this property, and now controls all but one sixteenth. This purchase gives the Moulton Company about 3000 feet on the Rainbow vein. The purchase is considered a very advantageous one.

RISING STAR.—This mine, which some time ago was incorrectly reported to have been sold to the Alice Mining Company, is still in the market. It belongs to Walker Brothers, of Salt Lake City.

NEVADA.

LINCOLN COUNTY.

W. S. Godbe is reported to have purchased at Pioche all the right, title, and interest to property owned by the Floral Springs Water Company, also the property owned by the Floral Mining Company, both for about $40,000. According to a portion of an agreement recorded, all the above property has been turned over to W. S. Godbe. There are also negotiations going on for the purchase of mining property owned by C. H. Patchen and Mr. Shivers. Should the company forming to work these properties succeed in purchasing these last-mentioned properties, this will give them nearly the whole of the north side of Spring Mount.

STOREY COUNTY—COMSTOCK LODE.

The Virginia City *Chonicle* reports the following:

CHOLLAR.—Work has been resumed on the ore-producing levels of this mine known as the "croppings." One shift of miners is employed in retimbering the tunnel running in on the E street level and breasting out in the front of the vein, but no ore will be extracted until milling facilities can be obtained.

CONSOLIDATED CALIFORNIA & VIRGINIA.—The old stopes on the 1550 level are to be opened up from the Consolidated Virginia shaft. On the 1400 level, a northwest drift was started from the C. & C. shaft. During the week ended the 5th inst., 1156 tons of ore were shipped to the Morgan mill, and 1741 tons to the Eureka mill. The average value of the ore milled during this period, according to assays from battery samples, was $10.97 a ton for that crushed at the Morgan mill, and $11.06 for that crushed at the Eureka mill. Bullion of the assay value of $34,632.51 was shipped to San Francisco.

GOULD & CURRY.—The west cross-cut sent in from the uprise on the 500 level has entered a body of fine mineralized quartz bearing all of the characteristics of Consolidated Virginia ore. The uprise is advancing above the 500 level on an incline to the west. The roof is in quartz-carrying metal.

MEXICAN.—The attempt to explore the mineral belt to the west with a drill has been abandoned on account of the heavy clay strata lying in that direction, through which it was found impossible to bore. A cross-cut is now going in.

NEW MEXICO.

GRANT COUNTY.

Bremen's mill is rapidly getting into order, and will begin running soon. The works have been almost completely renovated, and they are now arranged both for concentration and amalgamation. A force is engaged at the mines cleaning them out and getting them in complete working order.

PARAPET.—The company's mill at Georgetown is working steadily, and the output of the mine is increasing. Already there is a three weeks' supply of first and second-class ore ahead of the mill. Last week, four bars of silver bullion were shipped to the New York mint. The company employs a large force, and has a number of leasers at work on the property.

SIERRA COUNTY.

BLANK RANGE LIXIVIATION-WORKS.—This company has been organized with a capital stock of $100,000. The directors are C. J. Goff, M. H. Chamberlin, of Chloride; Edward Wilder, Henry N. Castle, McKendree; Jacob Mulvane, Topeka, Kansas. Principal places of business, Chloride, Sierra County, New Mexico, and Topeka, Kansas.

SIERRA GRANDE.—The new machinery at Lake Valley has been started up again. It has been found necessary to replace many parts of the plant in order to secure successful working. According to the Silver City *Sentinel*, Mr. Hadley has been experimenting on treating the flue-dust, and has been able to save 85 per cent of the assay value.

SOCORRO COUNTY.

GRAPHIC.—The company's plant at Socorro is now turning out bullion. The maximum capacity of the plant will be, when in full operation, 120 tons of ore a day. Stack No. 1, however, will not operate for the present; it will be remodeled and utilized as a copper furnace; and the management is negotiating for a supply of copper mineral.

PEACOCK.—This company, at Cooney, has completed arrangements for an uninterrupted season of active work on a much larger scale than ever. A quantity of new improved machinery will be placed on the

property, in addition to the large mill plant now in operation there. The new machinery will consist of a powerful steam hoist, a Cornish pump of large capacity, and Sergeant drills, which will be driven by power furnished by compound air-compressors. The vein on the Peacock ground will be explored along its length.

NEW YORK.

Ulster County has for years been noted for its enormous blue-stone interests. Recently, there has been great excitement among the leading dealers, who had formed a combination, and the result has been an action brought in the Supreme Court by Wellington Porter, of Saugerties. On February 5th, 1885, the Union Blue Stone Company (of which Samuel D. Coykendall is the actual head) entered into an agreement with the Bigelow Blue Stone Company, E. Sweeny & Sons, Hewitt Boice, A. H. Woodward & Co., Watson Crawford, F. P. Treanor, and other dealers to act as their agents and to apportion the sales among the dealers in the proportion specified by the agreement. The estimated amount of sales foots up $1,685,000. Of this, the Union Company was to receive ten per cent, or $168,500. Porter claims that he has been unfairly treated in the division of sales, and brings suit in the Supreme Court to have the books examined and his share of the association deal credited to him.

NORTH CAROLINA.

ALEXANDRIA COUNTY.

EMERALD AND HIDDENITE MINE.—Professor Hidden has begun work at the Emerald and Hiddenite mine, and reports the finding of a handful of emeralds at a depth of 42 feet from the surface. More than $15,000 has been expended in mining for gems at that place, and it has all been paid back to the company by the sale of gems.

MECKLENBURG COUNTY.

All the concentrating machinery and tools have lately been shipped from the Designolle Works, near the city of Charlotte, which indicates the final abandonment of that plant. It was erected several years ago.

RUDISILL.—The mine is now almost drained. Ore extraction has already begun from the lower levels. The ore is a heavy, fine-grained sulphuret. Vigorous work is also done on the Bush Hill end of the vein.

PENNSYLVANIA.

HUNTINGDON COUNTY.

The gold fever has apparently struck the people in this county. It was caused by the recent discovery of gold and silver ore near what is known as the Willow Spring, a half-mile northeast of Mapleton, the range running northeast and southwest. A few years ago, considerable money was expended on this land in prospecting for copper ore, but the work was finally abandoned. Arrangements were made with the owners, and prospecting began about a year ago. It is stated that Jacob Zillius, a mineralogist of Pittsburg, who represents a New York mining company, has purchased the claim for $30,000. Active operations will begin by the company at once. It will probably all end as previous booms have in this district.

SOUTH CAROLINA.

COOSA.—According to reports, six shares of this company's stock were lately forced on the market in the settlement of an estate. The par value is $100, and these six shares sold for $2000 each.

UTAH.

JUAB COUNTY.

MONMOUTH.—The calcining-furnace recently erected at the works has started up. Operations are going on satisfactorily at the mines, and the working force has been increased.

WEST VIRGINIA.

MASON COUNTY.

TIN ORE SMELTING COMPANY.—At a recent meeting of the stockholders of the company, formed to develop the mines, the proposition of a syndicate of Cleveland men to erect a furnace costing $35,000, payment to be made in the stock of this company, was accepted, it is said, and work is to begin at once.

BULLION PRODUCTION FOR 1886—SPECIAL OFFICIAL REPORTS.

MINES.	States.	Month of May.	Year from Jan. 1st, 1886.
		$	$
Alice, G. S	Mont...	.....	166,714
Boston & Montana, G	Mont...	.....	271,886
Caledonia, G.	Dak....	15,173	96,585
Christy, S	Utah...	.....	85,460
Chrysolite, S	Colo...	**	72,883
Colorado Central, S	Colo...	24,580	113,357
Daly, S	Utah...	.....	126,728
Deadwood-Terra, G	Dak....	51,048	207,984
Derbec Blue Grav., G. S	Cal....	.....	62,796
Elkhorn, G. S	Mont...	.....	81,918
Eureka, S. L	Nev....	.....	74,105
Father de Smet, G	Dak....	———	61,376
Freeland, G. S. C	Colo...	28,860	127,591
German Consolidated, G	Colo...	.....	53,673
Granite Mountain, S	Mont...	107,900	592,500
Head Center Cons., S	Ariz...	———	4,633
Hecla, G. S. L. C	Mont...	.....	251,303
Helena, G. S. L. C	Mont...	.....	240,334
Holmes, S	Nev....	.....	232,078
Homestake, G	Dak....	93,980	488,919
Hope, S	Mont...	.....	42,900
Iron Hill, S	Dak....	**	162,634
Iron Silver, S. G	Colo...	.....	252,540
Kentuck, S	Nev....	.....	1,040
Lexington, G. S	Mont...	107.806	424,965
Montana Limited, G. S	Mont...	.....	356,705
Moulton, G. S	Mont...	44,840	260,340
New Pittsburg, S	Colo....	———	5,230
Ontario, S	Utah...	.....	495,542
Plymouth Consolidated, G.	Cal....	49.502	255,473
Plutus, G. L. C	Colo...	11,890	95,049
Ropes, G. S	Mich...	3,500	14,191
Standard Consolidated, G.	Cal	.....	66,068
Tombstone, G. S. L	Ariz....	.....	271,741
Total		.....	$5,375,685

G., gold: S., silver; L., lead; C., copper; M., mica. Silver valued by the different companies from $1@$1.29 per ounce: gold, $20.67. *Not including value of lead and copper. ** Silver valued at $1.29. † Royalty. ‡ Net. § Ore sales. ‖ Not official. —— No shipments during month mentioned.

MARKETS.

NEW YORK, Friday Evening, June 18.

There is unquestionably a much better feeling generally in business than we have had to record for some months past, and though it is impossible to show much improvement in prices except in tin and lead, yet the feeling is favorable for an increase in business. Wall street, that financial barometer, as usual reflects this buoyancy, and even exaggerates it.

Silver.

DATE.	London. Pence.	N. Y. Cents.	DATE.	London. Pence.	N. Y. Cents.
June 12.	*	98¼	June 16	44⅞	98¼
14	44¾	98	17	44⅞	98¼
15.	44⅞	98¼	18	†	98 ‡

* 44⅞@44¾ † 44¾@44⅝. ‡ Weak.

The London market is lower than it was a week ago, and the market closes to-day, both there and here, weak at the figures of the accompanying table.

Foreign Bank Statements.—The governors of the Bank of England, at their regular weekly meeting, made no change in the bank's minimum rate of discount, and it remains at 2½ per cent. During the week, the bank gained £270,000 bullion; and the proportion of its reserve to its liabilities was raised from 39¼ to 39 13/16 per cent, against 52½ per cent at the same date last year. On the 17th inst., the bank gained £18,000 bullion on balance. The weekly statement of the Bank of France shows losses of 6,425,000 francs gold and 1,875,000 francs silver.

Copper.—This market may be characterized as very quiet but firm, with a more hopeful feeling than we had to record a week ago.

The Calumet & Hecla is said to have brought its foreign sales up to about 1,000,000 pounds, at a figure said to be "not less than 10¼ cents;" and its sales here at home at 10 cents are now said to have amounted to about 15,000,000 pounds. Why our own market, protected as it is by a heavy duty, should have copper cheaper than all the rest of the world, seems farther than ever from a satisfactory explanation.

Though it is impossible to verify the statements that make the Calumet & Hecla sales amount to 25 million pounds, they appear to be approximately correct; for it is understood on good authority that this company is practically sold out to August 1st, and after that date will have only its current production of about 4,000,000 pounds a month to dispose of.

We quote Lake Copper, 10@10¼c.; Orford, Baltimore, and P. S. C., from 9½@9⅝c.; Arizona Pig, 8½@8⅝c. Chili Bars are quoted in London to-day, as cabled to the Metal Exchange, £39 12s. 6d.; Best Selected, £44. The fluctuations during the week were confined to 2s. 6d. During the week, there were exported from New York 182,154 pounds of copper and 262,000 pounds of copper ore.

Messrs. James Lewis & Son report, under date of June 1st, as follows:

The fluctuations in the value of silver and in the Indian exchanges have interfered with the execution of orders for India, and the home demand continues very limited.

Arrivals in England and France from the United States to date this year are 7583 tons, against 15.776 tons in the same period of last year—a reduction of 8193 tons.

The unprofitableness of the production of copper at the present and even a higher range of values (the average of last year having been £4 4s. 10d. above what is at present obtainable) is apparent in the loss of £30,000 by the Mansfeld Mining Company of Germany, the out-turn of which was 12,500 tons of copper during 1885; also, in the loss of £40,000 by the two chief Australian mining companies, with an out-turn of 5000 tons. The profit of the Panulcillo Company, of Chili, has been only £2000 for 1885; while one of the leading Montana copper companies has ceased working its mines, owing to the low prices ruling.

Reference is constantly made to the large visible supply of copper; but it will be seen, from the figures annexed, that five years ago it was 882 tons more than at present, while the value of Chili Bars was then nearly £20 higher.

The arrivals from Chili during the month have been 3336 and the deliveries 1220 tons; and from other countries, 3389 and 3484 tons fine respectively.

The arrivals here from the United States have been 280 tons bars, 2228 matte, and 208 ore, equal to about 1757 tons fine copper; and in France, 90 tons fine.

The Chili charters for the month are 2600 tons, and the closing rate of exchange is 22⅝d.

Stocks of copper—	June 1st, 1884.	June 1st, 1885.	May 1st, 1886.	June 1st, 1886.
Chilian in Liverpool and Swansea	Tons fine. 24,292	Tons fine. 30,308	Tons fine. 35,981	Tons fine. 38,097
Chilian in France	1,060	1,114	1,145	1,135
American in Liverpool	86	814	1,079	969
Am'can in France	50	1,580	380	340
Sundries in Liverpool and Swansea	3,930	4,490	3,131	3,146
S'dries in London	3,636	5,685	6,156	6,550
France	20	45	35	25
Total	33,074	44,036	47,907	50,262
Afloat as advised by mail and cable to date:				
From Chili	11,524	9,819	10,767	9,182
Australia	1,650	1,000	2,300	1,400
Visible supply	46,248	54,855	60,974	60,844
Quotations:				
Bars, per ton	£55 15 0	£45 5 0	£41 5 0	£39 12 6
Ore, per unit	11s.	8s. 3d.	8s. 3d.	7s. 9d.

Tin.—This market still rises in sympathy with London. Cable prices, during the week, have advanced from £100 15s.@£103 7s. 6d., at which price it closes for spot to-day, and £104 7s. 6d. for three months. The market here has advanced from 22½c. a week ago to 23·05@23·10c. to-day, and the recorded sales at the Metal Exchange during the week have amounted to about 220 tons. Shipments from the East are still said to be quite light, and the impression obtains that prices will go up.

French & Smith, of London, report as follows, under date of June 3d:

The visible supply of tin continues to decrease, and values naturally rise. The present position is a healthy one, and advices point to a further curtailment of stocks. At public sale in Rotterdam, 22,182 slabs of Banca realized average fl. 58; 1189 slabs Billiton realized average fl. 57¾. Price of English was advanced to £102 for ingots.

	May 1st. 1886. Tons.	June 1st. 1886. Tons.	June 1st. 1885. Tons.	June 1st. 1884. Tons.
Foreign in London	6,087	5,922	6,089	6,725
Banca in Holland	643	990	1,905	1,193
Billiton in Holland	540	540	1,238	1,429
	7,270	7,452	9,232	9,347
Afloat for England, Straits, advised by mail and wire	990	926	1,432	1,725
Afloat Australian, ditto	722	779	768	1,088
Afloat Billiton	1,045	750	1,059	893
	10,027	9,907	12,489	13,053
Stocks in America, estimated and afloat, inclusive of English	2,080	1,855	1,023	1,300
Stocks in Dutch Trading Company's hands and afloat for future bi-monthly sales	2,905	2,693	3,375	2,703
Price of foreign	£94 10s.	£98	£92	£83 15s.

Lead.—The lead market is very strong and quiet, though the sales during the week have amounted to from 1000 to 1200 tons, of which about 200 tons were Corroding lead at 4·85c., and the remainder Common lead at from 4·77½@4·80c. The market is now 4·80c. for Common to 4·85c. for Corroding, and the London market is quoted £13 for Soft Spanish and £13 5s. for English. There are quite 3000 tons of lead in store here now.

Messrs. John Wahl & Co., of St. Louis, telegraph as follows to-day :

Market remains about the same ; if any thing, a shade firmer. No abatement is to be noted in the demand, which is quite good. Sales for the week sum up, perhaps, 750 tons, at 4·52½@4·57½c.

Messrs. Everett & Post, of Chicago, telegraph as follows to-day :

There has been considerably more inquiry for both hard and soft lead ; in consequence of which, sellers have been asking a little more, but only a moderate amount of business has been transacted. Sales for the past week will probably foot up 600 tons at 4·60@4·62½c. July. Bullion supplies continue scarce, and lead offerings are very light. It looks now as though present, if not higher, prices will rule.

Spelter.—The European price remains at £13 17d. 6s. for Silesian, and here we quote 4⅜@4·65c. for Western brands, according to quality ; 6¼@6½c. for New Jersey ; and 8¾c. for Bergenport Lehigh. Foreign Spelter, 4·80@4·90c.

Sheet-Zinc, 5½@5¾c.

New Jersey Zinc Oxide is quoted 3¾@4¼c.

The exports of lead from Spain have fallen off about 10 per cent, as compared with those of last year.

Antimony.—This market is quiet at 8½@8⅝c. for Hallett's ; 9c. for Cookson's here ; and in London, £33 for Hallett's.

Nickel.—We quote 70c. nominal. During the week, 1200 pounds of nickel were imported at this port.

Bismuth—Is quoted at $1.90@$2 a pound.

Aluminium—Is quoted at $1 an ounce.

Quotations of Sundry Minerals and Mineral Products.

White Lead.—The meeting of the corroders at Niagara last week is reported to have been satisfactory, and the combination was declared a success.

Red Lead.—An agreement has been come to between manufacturers to advance, or, at least, to steady prices, and 6 cents a pound, with 2½ per cent discount for cash in 15 days, was agreed on as the price to be asked.

No change was made in the price of litharge.

Paris Green.—The demand is quite active, and prices have been advanced to 16@22½c. a pound for 5-ton lots, according to package, and 16¾@23¼c. for lots of 1000 or 2000 pounds.

Jobbers west of Pennsylvania and New York must pay at least half cent a pound above these prices. No brokerages or commissions are allowed buyers. The buyer agrees to maintain prices, etc., and rebates are allowed to those who keep to the terms. September 1st, this rebate will be paid. It is half a cent a pound on 5 tons or over purchased during the season, and a quarter of a cent a pound on purchases of from 1 ton to 5 tons.

Acid—Sulphuric, p. lb., 60°, 1c ; 66°, 1·1@1¼c. ; Muriatic, 18°, 1¼@1½c. ; 20°, 1½@1¾c. ; Nitric, 36°, 5½c. ; 42°, 7c.
Alkali—p. lb , 36 p. c , 1·25c. ; Refined, 58°, 1·40c.
Alum—p. lb., lump, 1¾c. ; ground, 1⅞c ; p. ton, L'pool, lump, £5 10s. ; Sulph. of Alumina, £4 12s. 6d.
Ammonia—p lb., Sulph., 3@3¼c. ; Carb., 8@8¾c.
Arsenic—p. lb., white, 2c. ; red, 6¼c. ; p. ton, Plymouth, white, £8 10s.
Asbestos—American, p. ton, $20 ; c. i. f. L'pool best Italian, p. ton, £20.
Asphaltum—p ton, $13@$18.

Barytes Sulph.—Am. prime white, p ton, $18 ; foreign, $20 ; Off color, $13 ; Carb., lump, $30 ; No. 1, casks,Runcorn, £3 7s. ; No. 2, bags, £2.
Bleach—over 35 p. c., p. lb., 1½@1·55c.
Borax—p. lb., 6@7½c. ; Refined, p. ton, L'pool, £29.
Bricks—p. m., pale, $5 ; Jerseys, $7.50 ; Haverstraw, $8.50 ; front bricks, $10@$25.
Bromine, p. lb., 37c.
Building-stone. Amherst Freestone, p. c. ft., 75c.@$1 ; brownstone, $1@$1.25 ; granite, rough, 45c.@$1.

Cement—p bbl., Rosendale, $1 ; Portland Am., $2@$2.25; foreign, $2.25@$2.50.
Chalk—p. lb., 3@4c. ; precipitated, 5@7c.
China Clay—p. ton, English, $13.50@$17 ; Southern, $11.50.
Chrome Yellow—p. lb., 6@18c.
Cobalt Oxide—p. lb., 2·25c.
Copper, Sulphate, English Wks., p. ton, £14 15s. ; Precipitate, p. unit, 8s. 6d.
Copperas—p. lb., common, 60c. ; best, 1¼c. ; p. ton, in casks, Liverpool, £42 0s.

Emery—p. lb., grain, 3½c. ; flour, 2½c.

Feldspar, p. ton, ground, $15.

Indium, metallic—p. lb., $27.

Kainit—ton, $6.50@$7.50.

Lead—p. lb., Red, 6c. less 2½ per cent ; White Am. in oil, 6½@7½c. ; English, 7¼@7¾c.
Litharge—p. lb., powdered, 5½@5¾c. ; English flake, 9c.

Magnesite—Syrian, p. ton, $15.
Magnesium, p. oz., $1.
Manganese—p. ton, lump, 70 p. c., c. i. f. L'pool, £3 2s. 6d. 1s. 6d. per unit, up or down. ; ground, £6 ; metallic, p. lb., $1.10.
Mineral Wool—p. lb., 1@3c.
Molybdenum (metallic)—p. lb., $6.

Paints—Venetian reds are all 336 lbs. net in each barrel. *Venetian Red*, English, H. R. & Co.'s (M), $1.40, H. R. & Co.'s (H), $1.20 ; H. R. & Co.'s (F. V. A.), $1.12½ ; American Venetian Red, p. lb., 1¼@1¾c. ; *Spanish Brown*, English, 1@1¼c. ; American, ⅞@1c. ; English Indian Red Super, 6@7c. ; English Persian Red, 16c. ; English Turkey Red, 6c. ; English Tuscan Red, 8c. ; English Rose Pink, 9c. ; English Chrome Yellow, 8@18c. ; English Drop Blacks, 8@12½c. ; *Ochers*, French, 1½@5c. ; American, 1@2c. ; *Umbers*, Turkey Burnt, 3@4c. ; Turkey Raw, 2½@3c. ; Am., 1½c. ; *Sienna*, Italian Burnt, 6@7c. ; Italian Raw, 5@6c. ; Am., 2@3c. ; Ferronite, ground magnetic iron, 3c lb ; in oil, 5c. net
Phosphate Rock—p ton, S. Carolina $8 ; ground, $10.50 Canadian apatite, lump, 24c. p. unit for 80 p. c. and over.
Phosphorus, lb., 70c.
Plumbago—Ceylon, 4@5c. ; Am , 6@9c. ; London, per cwt., £10@£15.
Potash—Bromide, 34@40c. ; Chlorate, 15½@17c. ; Carb 4½@5½c. ; Caustic, 7½@8c. ; Iodide, $2.65. ; Muriate, 1¾c.
Potassium, metallic—p. oz., $2 ; Cyanide, p. lb., 30c.
Pumice-stone—Selected, lumps, 2¼@2¾c. ; Original, cks., 1⅝@1½c. ; powdered, 2@3c.
Pyrites—Non-cupreous, per unit, sulph., 10@12c.

Quartz, ground, p. ton, $18.
Quicksilver—46@48c. p. lb. ; London, £6 10s. p. flask (75 lbs.). Vermilion, 52c. in bulk; 53c. in bags.

Rotten-stone—p. lb , powdered, 3@3½c. ; lump, 5@6c. ; English, p. ton, powder, £3 ; lump, £4.

Salt—Liverpool ground, p. bbl., 70c. ; Turk's Island, 25c.
Salt Cake—p. lb., 65@¾c.
Saltpeter—p lb., crude, 4¾c. ; Refined, 6@8c.
Slate—Purple and green roofing, p 100 sq. ft., $6 ; red, $1 ; black, $5.
Soda Ash—p. lb., Carb , 48 p c., 1¼@1·40c ; Caustic, 48 p. c , 1·25@1·50c ; 70 p. c., 2·50c. ; Sal, English, ·85c. ; American, ·80c. ; nitrate, 2¼@2½c.
Sodium, metallic—p. lb., $4.50.
Sulphur—Roll, lb., 2⅜c. ; Flour, 2⅝c. ; Virgin Rock, 2⅛c ; Brimstone, crude, p ton seconds, $21.50; thirds, $20.25.

Talc—p lb., Ground French, 1¼c. ; Domestic, 6c. ; per ton $15 ; c. i. f. L'pool, p. ton, £4 5s.
Tungsten, metallic—p. oz., $4.

Vermilion—p. lb., American, 8@30c. ; English, 55c.
Vitriol—blue, p. lb., ordinary, 4@4¼c. ; extra, 4½c.

Zinc Oxide—p. lb., American, dry, 3½@4¼c. ; Antwerp, red seal, 5½c. ; Paris, red seal, 6c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 18.

The prices of non-Bessemer ores are weak, and will probably decline to last year's figures. The following are standard prices of Lake ores at Cleveland :

No. 1 Specular and Magnetic Bessemer ores, per ton	$6.25
No. 1 Specular (non-Bessemer) ores, per ton	5.50
Bessemer Hematites	$4.75@5.50
Non-Bessemer Hematites	3.75@4.25

Freights from Escanaba are 90@95c. a ton.

New York prices for foreign ores are from 8@9 cents per unit.

American Pig.—There has been no change in this market. Some of the furnace companies producing such standard irons as Thomas, Chickies, Glendon, Crane, etc., report deliveries active, showing a very satisfactory improvement in consumption ; but other concerns complain of a lifeless market, and no improvement in prices, our quotations being shaded for Southern irons.

We continue to quote for standard Lehigh brands, tide-water delivery : No. 1 X, Foundry, $18@$18.50 ; No. 2 X, Foundry, $17@$17.50 ; Gray Forge, $16@$16.50 ; while less popular brands sell 50c. or $1 below these figures, and fancy brands go as much above them.

Scotch Pig.—This metal moves along in the same old groove as for months past ; the arrivals being light, and but a small margin of profit being obtainable : Coltness, $20 ; Gartsherrie, $19 ; Summerlee, $19.50 ; Dalmellington, $18.50@$18.75 ; Langloan, $19. Cables to the Metal Exchange to-day quote : Coltness, 47s. 3d. ; Summerlee, 45s. 6d. ; Langloan, 43s. 3d ; Gartsherrie, 42s. 6d ; Glengarnock, 42s. ; Dalmellington, 41s. ; Eglinton, 39s. 6d. ; Warrants, 38s. 10d. ; Middlesboro', No. 3, 29s. 6d.

Bessemer Pig.—Several thousand tons of Bessemer Pig have come in during the week, but the market is quite dull, and prices unchanged. We quote Domestic at $18@$18.50 at the furnace, and Foreign, ex ship, $18.50@$19.50.

Spiegeleisen.—We quote English and German, $25.50@$25. Eighty per cent ferro-manganese is quoted at $63@$65.

Structural Iron and Steel.—Prices remain unchanged and business is fair, though not brisk, most of the contracts for large buildings having been made some time ago. We quote Angles, 1·90@2·10c. delivered ; Tees, 2·40c. ; Iron Beams and Channels, 3c. for American from dock. Steel Angles, 2·35@2·40c.

Plate Iron.—Common Tank, 2@2¼c. ; Refined, 2¼c. ; Flange Iron, 3¼@3·5c. ; Extra Flange, 4@4·25c.

Bar Iron.—Refined we quote at 1·75@1·90c. ; Common, 1·60@1·70c. Store prices are ·10@·20c. higher.

Steel Plates.—We quote 2½c. for Tank ; 3@3¼c. for Boiler and Ship Plates ; 3½@3¾c. for Flanges ; 4@4¼c. for Extra Flange and Fire-Box Plate.

Merchant Steel.—American Tool Steel, 7½@10c. ; special qualities, 11@20c. ; Crucible Machinery, 4½@5½c. ; Bessemer and Open-Hearth Machinery, 2½@2¾c.

The price-lists of the Steel Association appear to be somewhat bent, though not yet to their limit of elasticity.

Old Rails.—Tees and Double-Heads are offered at $18.50@$19, and but few sales are made here.

Cast-Iron Pipe.—The business of the pipe-founders is good ; they are well filled with orders, and prices, though low, are fairly remunerative. We quote $32.50 per ton for 4-inch pipe ; $31.50 for 6-inch ; and $28.50 for 48-inch, at the foundry.

Scrap.—We quote $18.50@$19.

Steel Rails.—The demand for steel rails is very good, and orders go begging. We hear of sales aggregating 26,500 tons, a portion of which is at Eastern mills and some at Cleveland.

Prices at Eastern mills are as usual, $34@$35. Some inquiry is made about foreign rails, but there is no probability that any large orders will go abroad at present.

Philadelphia. June 17.

[From our Special Correspondent.]

The only interest felt at present in the iron and steel market is as to a large volume of anticipated business. The current business in all its branches is light ; but there are inquiries that show that things are likely to improve.

Pig-Iron.—Foundry orders are for small lots at $18 and $17 respectively, and Forge at $15.50@$16. Southern iron is offered and taken in small lots at 50 cents under. There are several large consumers out, or nearly so ; but they decline to place orders. A better feeling exists now than a week ago.

Muck-Bars.—Very little new business has turned up. Quotations, $28.50@$29.50.

Blooms.—Domestic blooms quiet, and firm in price. Imported blooms and slabs are engaging a good deal of attention. Quite a number of sample lots have been ordered, and brokers are quite active. Several lots were ordered at $32. Western Pennsylvania buyers are negotiating with outside parties for large blocks of foreign material.

Manufactured Iron.—Merchant Bars are going at 1·60@1·90c. Mills are on full both here and through the State. The wages question is fixed. Big July orders are in sight.

Sheet-Iron.—Builders have increased orders for July and August delivery of galvanized iron. Card rates are paid on small lots. Light sheets are in fair request.

Structural Iron.—The contract for the Market street bridge has been awarded to a Lancaster firm. There were six bidders. The sum of $300,000 is appropriated for the work. Several bridge building enterprises are in sight, and manufacturers feel assured of a heavy summer and fall demand.

Steel Bars.—Rails have been contracted for this week at $34.50. Buyers have taken prices for large lots. Light sections have been sold at $38@$40.

Scrap.—Selected scrap has been selling at $20. Other kinds are in very little request.

Pittsburg. June 17.

[From our Special Correspondent.]

The market for raw irons presents nothing very new or important. Dealers are still apart in their views. The scale question is the stumbling-block at the present time. The Association scale of the iron-workers has

been agreed on, with some alterations or omissions from the Association demands, as you will no doubt have explained in your labor items. This is certainly good news, and will soon improve business.

A large amount of Southern pig-iron has found its way to this market, and, being generally of an inferior quality, is sold below quoted rates. Sales of 5000 tons Bessemer at $18 cash, being 50 cents a ton below what fair Pittsburg Bessemer sells for, and $1 a ton below what No. 1 commands. On the other hand, we hear of sales of 600 tons Eastern Anthracite Gray Forge at $15.75 cash. Sales of good brands of Gray Forge Lake ore are reported at $16.

All things taken into consideration, the past week has been fully as favorable as could be expected. A number of mills and foundries are getting ready for the midsummer vacation and stock-taking; hence, there is no inducement to do much at present. The feeling is hopeful as regards the outcome of business during the last half of the year.

Lake Ores.—Steady at unchanged rates.

Muck-Bar.—Dull; no demand; offered at $27.25@ $27.75.

Steel Bloom Ends.—Decline maintained $21@ $21.50.

Old Iron Rails.—No further sales quoted; $20.50@ $21.

Wrought Scrap.—No. 1, $17.50@$18; No. 2, $15.

Spiegel.—Declined to $27.50 a ton.

Pig-Iron.—Following are the current rates:

	$	$
Coke or bituminous:		
Foundry No. 1	17.50@	18.00
Foundry No. 2	16.75@	17.25
Gray F., No. 3	15.50@	16.00
" " No. 4	15.25@	15.50
White	14.50@	15.00
Mottled	15.00@	15.50
Silvery	15.50@	18.50
Bessemer	18.00@	18 50
Charcoal:		
Foundry No. 1	21.50@	23.00
Foundry No. 2	20.00@	20.50
Cold-Blast	25.00@	28.00
Warm-Blast	18.00@	24.00
20 p. c. Spiegel	27.50@	.....
Muck-Bar	27.25@	27.75
Steel Blooms	31.00@	36.00
Steel Slabs	29.00@	33.00
Steel Crop Ends	22.00@	.....
St'l Bl'm Ends	21.00@	21.50
Old Iron Rails	20.50@	21.00
Old Steel Rails	20.50@	21.00
No. 1 W. Scrap	17.50@	18.00
No. 2 W. Scrap	14 50@	15.00
Steel Rails	36.00@	.....
" light sect's	35.00@	42.00
Bar Iron	1.70@	1.75
Iron Nails	2.00@	2.05

Louisville. June 16.

[Reported by GEORGE H. HULL & Co.]

The market for pig-iron looks a little better than last week. The furnaces that were making such low figures seem to have unloaded their surplus At all events, they are reported as holding their iron firm, and some buyers in the market have found it necessary, in order to get the particular brand and quality of iron desired, to pay full figures. The volume of trade has improved considerably on the amount sold a month ago.

We quote for cash as below:

PIG-IRON.

Southern Coke, No. 1 Foundry	$16.50@$17.50
" " No. 2 "	15.50@ 16.50
Hanging Rock Coke, No. 1, Foundry	16.50@ 17.50
" " Charcoal, No. 1, Foundry	18.00@ 19.00
Southern Charcoal, No. 1. Foundry	17.50@ 18 50
Southern Coke, No. 1, Mill, Neutral	14.50@ 15.00
" Charcoal, No. 1 Mill	17.00@ 17 50
White and Mottled, different grades	12 00@ 13 00
Southern Car-Wheel, Standard Brands	25.00@ 26.00
Hanging Rock, Cold Blast	25.00@ 26 00
" " Warm Blast	20.00@ 21.00

COAL TRADE REVIEW.

NEW YORK, Friday Evening, June 18.

Statistics.

The report of the total output of coal from the mines on the line of the Chesapeake & Ohio Railroad for the week ended June 9th, 1886, and year from January 1st, is as follows: 1886, week, 23,820 tons; year, 506,787 tons: 1885, week, 18,648 tons; year, 481,987 tons. Increase, 1886, week, 5172; increase, year, 24,800 tons.

Production of Coke on line of Pennsylvania RR. for week ended June 12th, and year from January 1st:
Tons of 2000 pounds.

	1886. Week.	1886. Year.	1885. Week.	1885. Year.
Allegheny Region	3,421	92,443	3,577	84,098
West Penn. RR	1,715	45,978	1,275	18,800
Southwest Penn. RR	59,594	1,066,780	33,608	858,219
Penn. & W. Region	6,642	144,417	3,391	104,636
Monongahela	2,981	51,005	1,834	41,728
Pittsburg Region	.....	.....	.....	.....
Snow-Shoe	.....	9,345	230	6,652
Total	74,355	1,409,968	43,915	1,114,133

The Norfolk & Western Railroad Company reports the shipments of Pocahontas Flat-Top coal for the week ended June 12th, 1886, and year from January 1st as follows, tons of 2000 pounds: 1886—Week, 8,867; year, 349,066. 1885—Week, 8,639; year, 233,401. Increase, 1886—Week, 228; increase, year, 115,665.

Production Anthracite Coal for week ended June 12th, and year from January 1st:

Tons of 2240 lbs.	1886. Week.	1886. Year.	1885. Week.	1885. Year.
P. & Read. RR. Co.	281,062	4,531,215	260,941	4,192,164
L. V. RR. Co.	142,734	2,622,865	125,535	2,165,720
D. L. & W. RR. Co.	102,488	2,205,971	102,648	1,698,469
D., & H. Canal Co.	75,394	1,581,586	75,922	1,250,214
Penna. RR.	49,230	1,376,990	60,133	1,322,885
Penna. Coal Co.	29,750	528,860	21,647	518,540
Penna. Canal Co.	13,728	120,072	12,000	93,473
Total	694,386	12,967,559	658,826	11,241,465
Increase	35,560	1,726,094	.....	.....
Decrease	.....	.....	.....	.....

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1881	10,593,301	1883	12,102,090
1882	10,593,301	1884	11,702,121

Production Bituminous Coal for week ended June 12th, and year from January 1st:
Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1886. Week.	1886. Year.	1885. Week.	1885. Year.
Phila. & Erie RR	.....	7,464	13	14,229
*Cumberland, Md.	68,376	596,548	49,472	1,166,746
*Barclay, Pa.	1,933	92,567	5,347	111,912
*Broad Top, Pa.				
H. & Broad Top RR.	4,691	168,408	3,213	78,810
East Broad Top	.....	.....	.....	.....
Clearfield Region, Pa.				
Snow Shoe	354	35,885	1,013	77,790
Karthaus (Keating)	1,944	52,355	2,283	61,796
Tyrone & Clearfield	54,276	754,854	48,677	1,388,765
Alleghany Region, Pa.				
Gallitzin & Mountain	9,220	377,501	10,057	229,819
Total	140,794	2,089,582	120,075	3,129,867

* Tons of 2240 lbs.

WESTERN SHIPMENTS.

Pittsburg Region, Pa.				
West Penn RR.	7,578	146,251	2,159	120,517
SouthwestPenn.RR.	1,117	89,404	1,461	48,017
Pennsylvania RR	5,770	106,345	4,577	86,720
Westmoreland Region, Pa.				
Pennsylvania RR.	14,707	391,992	28,526	459,362
Monongahela Region, Pa.				
Pennsylvania RR.	11,384	157,249	6,225	95,053
Total	40,556	891,241	42,948	809,669
Grand total	181.350	2.980,823	162,023	3,939,536

Anthracite.

Although the condition of the anthracite coal trade is very dull at present, and prices are considerably lower than they were at the corresponding time last year, and still worse when compared with previous years, there is probably a little better tone than a week ago. While we do not find that any of the offices report a worse condition of trade, some note a slight increase in the demand.

Although the companies are not cutting prices as much as individuals, concessions are very general, either directly from the companies, or through their contractors—generally from the latter. The very low prices of last week are still indefinitely spoken of as existing now; but we have been unable to secure proper evidence that such is the case.

Coal is accumulating, but not to a great degree at tide-water. A great deal is sent West and stocked there for the fall and winter demand, and it is discovered that there is a good deal of coal in stock elsewhere. On Saturday, the Reading Company had 46,151 tons of coal on hand at Port Richmond, or 7262 tons more than a week before. The Delaware & Hudson Canal Company has about 350,000 tons at Honesdale and Rondout; the Pennsylvania Coal Company, about 100,000 tons at Hawley and Newburg; the Delaware, Lackawanna & Western, fully 100,000 tons at Port Morris; while South and Perth Amboy have very large stocks, and there is coal at the other ports.

The allotment for July was fixed at 2,500,000 tons after a session of nearly an hour and three quarters this afternoon. This was at least 250,000 tons more than was expected.

The Delaware, Lackawanna & Western Company received an average of only $2.96 a ton for the entire coal sold by it during May, f.o.b vessels at Hoboken. This average is 43 cents lower than for May last year, and 63 cents under May, 1884. It is, however, 10 cents a ton above the April, 1886, price.

As our Buffalo correspondent "Occasional" pointed out, this company is the chief demoralizer of the Western and Northern market. We hear of this company offering its coal at Montreal at about $4.75, which appears to be a good deal below cost. This may be figured out about as follows, the freight from Oswego to Montreal being uncertain, though we believe not less than $1.25:

	Per ton,
Cost of mining	$1.24
Haul from mine to Scranton	.20
Scranton to Oswego, 177 miles, at ⅛ cent per ton-mile	.88½
Unloading, loading, and Oswego charges	.27
Oswego to Montreal	1.25
Duty, 60 cents; cartage, 25 cents	.85
Montreal commission	.25
Cost in Montreal	$4.94½

Carrying coal at half a cent per ton-mile is certainly no great object, nor is mining and preparing anthracite at $1.24, which barely covers cost and provides nothing for rental or exhaustion of property.

Nevertheless, Lackawanna stock is booming up, just as if the company were making money on its coal business.

The Reading Company has taken the Brooklyn Water-Works contract for 27,000 tons of broken coal, to be delivered on cars at Long Island City at $3.50 a ton, as may be required during the year. This price is 25 cents under the bid of the Lehigh & Wilkes-Barre Coal Company, which has had the contract for ten years past. The Reading Company claims that its bid is above circular price, as the cars will be carried around on floats, and the charge will be less than the difference between the f.o.b. price and the delivered price. We hear of at least two of the companies selling Stove coal at figures equivalent to $3.25 a ton f.o.b., and perhaps a little below this.

Vessels are very abundant and offered at 75 cents to Boston, which is 10 cents under the Association's minimum.

We quote ordinary free-burning coals f.o.b. as follows:

	Week ended June 18.	Week ended June 11.	Week ended June 4.
Lump	$3.00@	$3.00@	$3.0 @ ....
Steamboat	3.00@	3.00@	3.00@ ....
Broken	2.85@$2 90	2.85@$2.90	2.85@$2 90
Egg	2.85@ 2.90	2.85@ 2.90	2.85@ 2.90
Stove	3.20@ 3.40	3.1 @ 3.40	3.20@ 3 40
Chestnut	2.75@ 3.00	2.75@ 3.00	2.75@ 3.00
Pea	1.90@ 2.00	1.90@ 2.00	1.90@ 2.00
Buckwheat	1.60@ 1 70	1.60@ 1.70	1.50@ 1.80
Dust	1.25@	1.25@	1.15@ 1.25

Bituminous.

It is stated that the Consolidation Coal Company has secured the White Star contract. Outside of this, there has been no important business consummated. Cars on the Pennsylvania road have been exceedingly scarce, and shippers by that route have been compelled to enter the market to purchase coal to supply their regular trade. As a consequence of this, spot prices are higher. In fact, we know of sales of Cumberland coal up to $3.35 alongside. For future delivery, we learn of one offer to supply 20,000 tons of Clearfield coal at $2.80 alongside. Vessels are in great abundance everywhere, and the Association minimum rates are shaded.

Buffalo. June 17.

[From our Special Correspondent.]

Your "Occasional" letter published last week placed my poor communication far in the background. Talk about dynamite and bombs, and socialistic dogmas and matters of kindred interest—why, they are mild soporifics compared with the sensation that said document produced among the coal fraternity. And then the promised "question of railroad rates" proposed to be discussed pretty soon by the same caustic and well-posted writer. Well may he say, "Look out for fun, for they are dancing (mad) already!" Dealers are asking of one another "Who is Occasional?" and your correspondent has been pestered (with the thermometer at 88 degrees in the shade) almost to death by anxious inquirers as to the individuality of the cuss who dares to give utterance to such trenchant remarks!

The anthracite coal trade is really very dull; but few orders have been given for the coming winter's home supply, as many persons are holding back, believing that the schedule of prices will be lowered on the first of the month.

I have heard of contracts being made at the lowest season's rates. What does that mean? These facts are given without comment; your readers can make their own.

The bituminous coal trade features noted last week continue in force. Messrs. Williams & Co., of this city, state that their Oakridge mines, in Armstrong

County, Pa., have been operated since June 8th, the strikers having returned to work.

Coke is steady and unchanged.

Our docks and wharves are bare of vessels, excepting the regular line propellers. There has been a fair demand for craft for Chicago and Milwaukee, but carriers do not care to go to Lake Michigan ports unless obliged to do so. Rates are firm, with indications of a slight advance pretty soon. The shipments for the week aggregate scarcely a day's work on ordinary occasions. To-day, coal is plenty, with no charters made up to noon.

The coal shipments by lake from June 10th to 18th, both days inclusive, aggregated only 35,350 tons; namely, 8660 to Chicago, 8300 to Milwaukee, 2220 to Racine, 1200 to Sheboygan, 530 to Detroit, 2200 to Green Bay, 5570 to Superior City, 530 to Sandusky, 1450 to Washburn, 100 to Bay City, 3450 to Duluth, 400 to Alpena, and 750 to Kenosha; grand total for the season, 386,386 net tons. The engagements and rates reported were per net ton as follows: 60c. to Chicago, Milwaukee, and Green Bay; 65c. to Sheboygan, Kenosha, and Racine; 40c. to Duluth and Superior; 35c. to Alpena, 25c. to Bay City, and 20c. to Detroit, Sandusky, and Toledo.

The charters by canal for the past week were as follows: 2 loads to Syracuse, 60c. net, free out only; 2 loads to Palmyra, 50c. net, captain to pay loading and unloading. The nominal rates to New York, $1.25, and to Albany $1 per net ton, captain to pay loading and unloading.

Receipts by canal of coal for the week ended June 14th, 900 tons; the shipments for the same period, 890 tons.

[From an Occasional Correspondent.]

I have your favor of Saturday, in which you state that the Delaware & Hudson denies taking the Detroit Water-works contract, as stated in my letter last week. Strictly speaking, the contract was taken by Pittmans & Dean. Mr. Pittman has handled Delaware & Hudson coal for many years, is an experienced and prudent dealer, and it is safe to say that his bid was not a leap in the dark. It was generally supposed that he was acting for the Delaware & Hudson in this matter. That company denies it. Let us see who puts in the coal.

I am told that the Delaware, Lackawanna & Western people take offense at my observations. Why should they? Their policy is bold, aggressive, and successful; their business increases rapidly; and while the Lehigh Valley, which was for so many years regarded as the better property, has dropped to a four per cent stock, the Delaware, Lackawanna & Western pays seven, and intimates that it earns very much more. While other corporations find trade dull, it claims that it can not fill its orders. Mr. Holden is a coal merchant of great ability, and has seemingly learned to place small dependence on the protestations of his competitors and great reliance on the representations of his subordinates. For the first, who blames him? and if the second, coupled as it is with a determination to meet all prices, results in a large tonnage for the Delaware, Lackawanna & Western, his superiors are content.

So much for criticisms on my last letter.

As to trade, all are complaining of very dull times. There is some eagerness to move coal from one depot to another, hence the demand for vessels; but for actual buying of coal there is little. Locally, there is some buying at moderate cuts. There is some weakness in prices and a feeling of uneasiness occasioned by the remembrance of that heavy overdose of coal poured on the market last winter. We had almost outlived the remembrance of the auction sale of 1876, but that brought it all back. They were both insane, viewed from my stand-point.

I have promised to say a word as to freight rates, but I will reserve the topic for some future screed.

OCCASIONAL.

Boston. June 16.

[From our Special Correspondent.]

Anthracite coal has moved slowly this week. The market, as seen in its local operations, is heavy and weak, as at our last report. But little Stove coal is sold above a basis of $3.25 f.o.b. at New York. Prices vary from that figure up to $3.40, which is the outside asking price for white ash coal, where shippers have any to sell. There is a fairly steady feeling in Broken coal at about $3 f.o.b., but Egg coal has eased off a bit to $2.90@$3.10. The demand for Broken for steam purposes is lighter, and will continue to grow still lighter now that bituminous coal is in better supply.

From the listlessness of retailers here in Boston and vicinity, it is very evident that there has been a good deal of coal sold ahead for future delivery. Otherwise, present prices could not fail to prove attractive. Added to this as a factor in the dullness among the wholesale trade, retail dealers are putting out very little coal just now. Trade is very dull indeed with them.

More bituminous coal could be disposed of than comes along, even now, nearly a month since the strike collapsed. Spot cargoes have sold as high as $3.60 within a few days, but $3.50 would be an outside delivered price for a cargo to arrive. As heretofore noted, dealers are selling as much coal f.o.b. as they can, at about $2.15@$2.25, according to port of shipment. It was not known, at the time the Providence Railroad bought its coal, who secured the contract. It now comes out that Gay & Parker were the successful bidders. The amount was 25,000 tons.

Now that the gas-coal strike is over, there will be more business in that line. The f.o.b. price for good coal is about $3.

There is a firm feeling in freights. The Boston Tow-Boat Company has two barges in operation, and, as expected, they have successfully made the trip in thirty-six hours from Boston to New York. A third barge is to be added. Regular running time is not established, and no regular rates, this being left to the individual shipment. The dealers seem to take kindly to the scheme. The two barges now in operation carry 1000 tons, and the third will carry 1100 tons.

We quote vessel rates exclusive of discharging:

New York, 75@85c.; Philadelphia, $1; Baltimore, $1.20; Newport News, $1.05@$1.10; Richmond, $1.25; Cape Breton, $1.85@$2; Bay of Fundy, $1.60.

No advance has as yet been realized in retail circles. Trade is very quiet.

Pittsburg. June 17.

[From our Special Correspondent.]

Owing to navigation being suspended on the Ohio, the coal trade has been very quiet and weaker, although not quotably lower. The heavy rains yesterday give promise that coal navigation will be resumed the last of the week. There is plenty of coal ready, with enough boats in port to move several million bushels West and South. The nominal rates are f.o.b. in boats 4¼@5c. a bushel; railroad, 4¼@4¾c.

Connellsville Coke.—Market quiet. We have no change to report. Blast-Furnace Coke, $1.50, f.o.b. cars at the ovens; Foundry, $1.75; Crushed, $2.25 per net ton.

FINANCIAL.

Mining Stocks.

NEW YORK, Friday Evening, June 18.

The mining market is still in its stupor, and there is apparently no chance of speedy awakening. The transactions were a little larger than those of the preceding week, but were dull and featureless. Prices remained as usual.

Navajo has been one of the most active stocks on the list, and advanced from 65@95c., closing at 75c. Eureka was higher, ranging from $2.40@$2.50. Assessments have again poured upon the Comstock shares; but nevertheless, considerable business was done in these stocks. Consolidated California & Virginia has declined; this movement is probably due to the report that the company's financial condition may perhaps soon call for an assessment, instead of the dividend so long expected. The stock sold at from $1.30@$1.15. Hale & Norcross, however, advanced from $2.25@$2.55; and Savage, from 90c.@$1.20. Sutro Tunnel was actively dealt in at 10c. and 12c.

The Homestake Gold Mining Company has declared its usual monthly dividend of $50,000, making now a total of $3,418,750. The stock is now selling at $21. It is reported that the Deadwood-Terra Mining Company will shortly resume the payments of dividends. The operations at the mines are reported as giving very favorable results. All operations at the Father de Smet have ceased, and little has been doing in the stock of late; five shares sold this week at $1 a share. Caledonia ruled at from $1@$1.10.

Plymouth Consolidated had a few sales at from $13.50@$13.25. Quicksilver Preferred, at from $24.50@$23; Common, at $5. Bulwer was active at from $1.90@$1.65. Bodie advanced from $1.50@$1.80. Mono declined from $2.15@$1.90.

Colorado Central was again the feature of the Colorado stocks, some 2500 shares changing hands at from $2.50@$2.55. Iron Silver ruled at from $1.95@$2. Robinson Consolidated, at 55@50c. Lacrosse showed large sales at 8@9c.

Ontario has declared its one hundred and twenty-first dividend of $75,000. Horn-Silver received considerable attention, and was firm at from $2.90@3.

Rappahannock sold at 11c., and Castle Creek at 5c.

The total transactions were 52,810 shares, an increase of 3775 shares, as compared with the preceding week.

Coal Stocks.

There has been the wildest kind of a bull market on the entire list since our last. There have been no developments of importance relating to values. The cause of advancing prices for stocks is a rapidly growing belief that all kinds of business are greatly improving, and that the railroads will earn more money in the future. From present indications, it would seem that we have entered upon a period of more or less wild speculation, which may even extend to all the money centers of the world.

The coal stocks have been very strong, without any legitimate basis when existing conditions are considered. On next Friday, a dividend will be declared on Delaware, Lackawanna & Western, and $140 or over is predicted for the stock before the September dividend period. Whether this be justified or not, it seems very probable that it will occur. The street is full of all kinds of rumors of advantage to the security-holders of the Reading, to come from one or the other party trying to reorganize the company. Jersey Central moves up on expectations of results to be accomplished by the financiers who are now at work on the company's affairs. Maryland Coal has advanced 3½ per cent this week, and shows signs of one of those rapid rises with which it has been favored in the past. The stock is certainly worth much more money than its present market price.

The dealings in Delaware, Lackawanna & Western aggregate 294,725 shares, at $129¾@$131⅝, closing at $131. The sales of Delaware & Hudson amount to 14,835 shares, at $98@$99⅝, closing at $99¼. Jersey Central sold at $53½@$55⅝, and closed at $54⅝, with sales of 53,013 shares. Reading, with transactions of 42,580 shares, sold at $23⅝@$25¼, closing at $25⅛.

The bonds of the Altamont Coal Company have been listed, and are selling at 98@99 at the Consolidated Petroleum and Stock Exchange, and will be regularly dealt in in the future. The company's property is in Laurel County, Kentucky, and it owns about 3500 acres of land, which, with the improvements, cost, it is said, $175,000. The coal is supplied to all points in Kentucky on the Louisville & Nashville road. Much of it goes to Tennessee. The great bulk of it, however, is sold to the Louisville & Nashville Railroad Company.

The Chicago, Wilmington & Vermilion Coal Company has given notice that the following numbers of bonds of $1000 each were drawn June 2d, in accordance with the requirements of the trust mortgage, namely, twenty bonds: Nos. 34, 120, 137, 139, 142, 153, 155, 159, 185, 241, 252, 259, 265, 277, 279, 280, 290, 297, 303, 314. The principal and accrued interest of these bonds will be paid upon presentation at the office of the Farmers' Loan and Trust Company, Nos. 20 and 22 William street, New York, and will cease on and after sixty days from date.

Meetings.

The annual and special meetings of the following companies will be held at the times mentioned:

Cape Rozier Mining Company, No. 171 Broadway, New York City, June 22d, at two o'clock P.M.

Pipe Line Certificates.

Messrs. Watson & Gibson, commission brokers, No. 49 Broadway, report for the week as follows:

Petroleum has been firm, with greater disposition to buy, on the strength of the decline in production of the Washington field. Several important wells are due some time hence, but our scouts on the oil-field doubt whether the entire production of the Washington and Kane fields will, at any time this summer, exceed

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par value.	Assessments. Total levied to date.	Assessments. Date and amount per share of last.	Dividends. Total paid to date.	Dividends. Date and amount per share of last.
1	Adams, s. L	Colo.	$1,500,000	150,000	$10	*		$405,000	Jun. 1886 .15
2	Alice, s. C	Mont	10,000,000	400,000	25	*		725,000	Jun. 1886 .06¾
3	Amie Con., s. L	Colo.	5,000,000	500,000	10	*		330,000	Oct. 1883 .05
4	Atlantic, C	Mich	1,000,000	40,000	25	$280,000	Apl. 1875	$1.00	320,000	Jan. 1886	$1.00
5	Argenta, s	Nev.	10,000,000	100,000	100	295,000	July 1885	.10	40,000	Feb. 1880	.20
6	Barbee & Walker, s.	Utah	1,000,000	100,000	10	*			60,000	Nov 1880	.10
7	Bassick, G. S	Colo.	10,000,000	100,000	100	*			400,000	Mar. 1881	1.00
8	Belle Isle, s	Nev.	10,000,000	100,000	100	140,000	May 1886	.10	300,000	Dec. 1879	.25
9	Belcher, G. S	Nev.	10,400,000	104,000	100	2,217,335	ec. 1885	30	15,397,000	Apl. 1876	1.00
10	Bellevue Idaho, S. L	Idah.	1,250,000	125,000	10	26,250	Dec. 1881	.10	100,000	May. 1886	.10
11	Big B'nd Hydraulic, G	Dak.	1,000,000	200,000	5	*			174,000	Jun 1886	.03
12	Black Bear, G	Cal.	3,000,000	3,000	100	22,500	Dec. 1884	2	895,000	May 1883	.20
13	Bodie Con., G. S	Cal.	10,000,000	100,000	100	274,990	Dec. 1883	.5	1,622,572	Apl. 1885	.50
14	Bonanza Developm't	C & M	3,000,000	300,000	10				135,000	Oct. 1882	.15
15	Bonanza K'g, Cons. S.	Cal.	1,000,000	100,000	10	*			185,000	Feb. 1885	.10
16	Boston & Mont. G	Mont	2,000,000	200,000	10	*			520,000	Jun 1886	.15
17	Breece, S	Colo.	5,000,000	200,000	25	*			2,000	Feb 1890	.01
18	Brooklyn Lead, L. S.	Utah	500,000						95,000	Jan. 1886	.05
19	Bulw'r, G	Cal	1,900,000	100,000	100	40,000	Oct. 1885	20	17,000	Jan. 1884	.10
20	Caledonia, G	Dak	10,000,000	100,000	100	505,000	May 1885	.15	40,000	Feb 1886	.10
21	Calumet & Hecla, C	Mich	2,500,000	100,000	25				27,850,000	July 1886	5.00
22	Carbonate Hill, S. L.	Colo.	2,000,000	200,000	10	*			80,000	Apl. 1884	.05
23	Caribou Con., S	Colo.	1,500,000	150,000	10	*			50,000	Mch 1880	.10
24	Castle Creek, G	Idah.	100,000	100,000	1				51,000	Oct. 1883	.03
25	Catalpa, S L	Colo.	3,000,000	300,000	10	*			270,000	May. 1884	.10
26	Central, C	Mich	500,000	20,000	25	100,000	Sept 1861	.06	1,780,000	Jan. 1886	2.00
27	Christy, S	Utah	10,000,000	100,000	100				10,000	Jun. 1885	.10
28	Chrysolite, S. L	Colo.	10,000,000	200,000	50	*			1,650,000	Dec. 1884	.25
29	Colorado Central, S. L	Colo.	2,750,000	275,000	10	*			102,500	Jun 1886	.05
30	Cons Cal & Va., G. S.	Nev.	21,600,000	216,000	100	108,000	Jan. 1 85	.20	64,800	Feb. 1886	.30
31	Con Gold Mining, G.	Ga.	500,000	100,000	5	*			105,000	Nov. 1883	.02
32	Contention, S	Ariz.	12,500,000	250,000	50				42,587,500	Dec. 1884	.25
33	Crescent, S. L. G	Utah	15,000,000	600,000	25	‡			180,000	Sept 1885	.05
34	Crown Point, G. S	Nev.	10,000,000	100,000	100	2,675,000	Feb. 1882	.25	11,588,000	Jan. 1875	2.00
35	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*			§900,000	Jan. 1883	.10
36	Derbec B. Grav., G. S.	Cal.	10,000,000	10,000	100	90,000	Dec. 1881	.10	130,000	Apl. 1886	.10
37	Dunkin, S. L	Colo.	5,000,000	200,000	25	*			220,000	Sept 1884	.05
38	Elkhorn, G. S	Mont	1,000,000	100,000	10	50,000	July 1883	.50	115,000	Apl. 1886	.50
39	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	450,000	Apl. 1886	1.00	4,817,500	July 1882	.25
40	Evening Star, S. L	Colo.	500,000	30,000	10	*			1,400,000	Nov 1883	.50
41	Excelsior, G	Cal.	10,000,000	100,000	100	560,000	Sept 1885	1 00	875,000	Oct. 1880	.25
42	Father de Smet, G	Dak.	10,000,000	100,000	100	2,00,000	Nov 1878	1.00	1,125,000	Dec 1885	.20
43	Franklin, C	Mich	1,000,000	40,000	25	220,00	Jun 1871		52,000	Jun. 1886	1.00
44	Freeland, G S. C	Colo	5,000,000	200,000	25	*			170,000	Apl 1886	.10
45	Fresno Enterprise, G	Cal.	5,000,000	100,000	50		Mch 1883	.10	110,000	July 1882	.10
46	Gould & Curry, G. S	Nev.	10,800,000	108,000	100	3,917,000	Mar. 1886	.40	3,832,000	Oct 1877	10.00
47	Grand Central, S	Ariz.	1,000,000	100,000	10				625,000	Dec. 1882	.25
48	Grand Prize, S	Nev.	10,000,000	100,000	100	570, 0	Apl. 1886	.40	495,000	Mar. 1881	.25
49	Granite, S	Colo.	125,000	125,000	1				6,250	May 1883	.01
50	Granite Mountain, S.	Mont	10,000,000	400,000	25				1,000,000	May 1886	.25
51	Green Mountain, G	Cal.	1,250,000	125,000	10	*			212,000	Nov. 1881	.07½
52	Hale & Norcross, G. S	Nev.	11,200,000	112,000	100	4,874,000	May. 1886	.50	1,598,000	Apl 1871	5.00
53	Hall-Anderson, G	N. S.	150,000	150,000	1				7,000	Jan. 1882	.05
54	Hecla Con., S. G. L. C	Mont	1,500,000	30,000	50				1,002,000	May 1886	.50
55	Hel'a Mg & Red, G. S. L	Mont	3,315,000	663,000	5	*			158,250	Jan 1886	.03
56	Holmes, S	Nev.	10,000,000	100,000	100	350,000	May 1886	.50	75,000	Apl. 1886	.25
57	Holyoke, G	Idah.	200,000	200,000	1				27,000	Feb. 1883	.10
58	Homestake, G	Dak.	12,500,000	125,000	100	200,000	July 1878	1.00	3,418,750	Jan. 1886	.40
59	Honorine, S. L	Utah	5,000,000	250,000	2	25,000	Jun. 1883		62,500	Nov 1885	.05
60	Hope, S	Mont	400,000	8,000	50	*			158,252	Oct. 1884	1.50
61	Horn-Silver, S. L	Utah	10,000,000	400,000	25	*			4,000,000	Nov. 1884	.50
62	Idaho, G	Cal.	310,000	3,100	100				3,899,800	Dec. 1885	7.50
63	Independence, S	Nev.	10,000,000	100,000	100	320,000	Aug. 1885	.20	225,000	Sept 1879	.25
64	Indian Queen, S	Nev.	250,000	125,000	2				368,750	July 1883	.03
65	Inyo, G	Cal.	500,000	100,000	5	*			45,000	Apl. 1882	.05
66	Iron Hill, S	Dak.	2,500,000	25,000	50	82,500	Oct. 1885		75,000	Jul. 1886	.05
67	Iron-Silver, S. L	Colo.	10,000,000	500,000	50	*			1,600,000	Apl. 1886	.20
68	Jackson, G. S	Nev.	5,000,000	50,000	100	10,000	Nov. 1880	.20	35,000	Mar. 1886	.10
69	Jocuistita, S	Mex.	2,500,000	250,000	10				1,200,000	Feb. 1885	.50
70	Kentuck	Nev.	3,000,000	30,000	100	342,000	Nov 1881	.30	1,350,000	July 1884	.10
71	La Plata, S. L	Colo.	2,000,000	200,000	10	*			610,000	Sept 1882	.30
72	Leadville Cons., S. L.	Colo	4,000,000	400,000	10	*			390,000	May 1886	.05
73	Lexington, G. S	Mont	4,000,000	40,000	100	*			565,000	Jan 1885	2.00
74	Little Chief, S. L	Colo	10,000,000	200,000	50	*			780,000	Mch 1885	.10
75	Little Pittsburg, S. L	Colo.	20,000,000	200,000	100	*			1,050,000	Mch 1880	.50
76	Manhattan, S	Nev.	5,000,000	50,000	100	150,000	July 1879	1.00	437,500	Feb 1886	.25
77	Marguerite, G	Cal.	500,000	25,000	20				18,750	Oct. 1882	.25
78	Martin White, S	Nev.	10,000,000	100,000	100	1,150,000	Mar. 1886	25	90,000	July 1879	.30
79	Minnesota, C	Mich	1,000,000	40,000	25	420,000	Apl. 1885	1 00	1,850,000	Mar. 1876	
80	Mono, G	Colo	5,000,000	500,000	10	56,000	Jun. 1885	.50	12,500	Mar. 1886	.25
81	Montana, Lt, G. S	Mont	3,300,000	33,000	100	*			301,950	Jan. 1886	.37½
82	Morning Star, S. L	Colo.	1,000,000	100,000	10	*			550,000	Sept 1885	.25
83	Multon, S. G	Mont	2,000,000	400,000	5	*			230,000	Mar 1886	.07½
84	Mount Pleasant, G	Cal.	150,000	150,000	1	*			105,000	Mar. 1881	.10
85	Mt. Diablo, S	Nev	5,000,000	50,000	100	137,500	Jun. 1880	2.00	80,000	July 1885	.20
86	Napa, Q	Cal.	700,000	100,000	7				290,000	Jan. 1883	.10
87	Navajo, G. S	Nev.	10,000,000	100,000	100	395,000	Mar. 1886	25	325,000	Feb. 1885	.25
88	N Hoover H ll, G. S.	N. C	300,000	120,000	2½	*			30,000	Dec. 1885	.05½
89	New York Hill, G	Cal.	5,000,000	50,000	100	62,500	Oct 1885	.15	215,000	Aug. 1882	.10
90	Northern Belle, S	Nev.	5,000,000	50,000	100	425,000	Jan. 1884	8.00	2,400,000	Apl. 1883	50
91	North Belle Isle, S	Nev.	10,000,000	100,000	100	150,000	Mar 1886	.20	3,000	Aug. 1881	.15
92	Ontario, S. L	Utah	15,000,000	150,000	100				7,475,000	Jun. 1886	.50
93	Ophir, G. S	Nev.	10,000,000	100,000	100	3,957,800	Jun. 1886	.25	1,595,000	July 1882	1.00
94	Original, S. C	Mont	1,500,000	60,000	25	*			114,000	Oct. 1884	.05
95	Osceola, C	Mich	1,250,000	50,000	25	480,000	Apl. 1876	1.60	972,500	Sept 1884	25
96	Oxford, G	N. S.	125,000	125,000	1	*			34,500	Oct. 1885	.02
97	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	47,000	Mar. 1882	.15	6,000	Feb. 1886	.10
98	Pleasant Valley, G. S.	Nev.	10,000,000	100,000	100	40,000	Mar 1884	.10	30,000	Dec. 1882	.05
99	Plutus, G. S. C. L	Colo.	2,000,000	200,000	10	*			920,000	Feb. 1886	.10
100	Plymouth Con., G	Cal.	5,000,000	100,000	50	*			1,675,000	May 1883	.25
101	Prussian, S. L	Colo	1,500,000	150,000	10				132,000	Jan 1883	.10
102	Quicksilver, pref, Q	Cal.	4,300,000	43,000	100				731,400	Feb. 1886	1.50
103	" com., Q	Cal	5,700,000	57,000	100				151,000	July 1882	.40
104	Quincy, C	Mich	1,000,000	40,000	25	200,000	Dec. 1862		4,33 ,000	Jan. 1886	4.00
105	Richmond, S. L	Nev.	1,350,000	54,000	25	*			4,177,587	May 1886	1.25
106	Ridge, C	Mich.	500,000	20,000	25	220,000	Mar. 1886	.50	10,000	Feb. 1880	.50
107	Rising Sun, S	Dak.	750,000	150,000	5	*			52,000	May 1881	.07½
108	Robinson Con., S. L	Colo.	10,000,000	200,000	50	*			585,000	Mar 1886	.05
109	Robert E. Lee, S. L	Colo.	10,000,000	500,000	20				100,000	Dec. 1882	10
110	Rooks, G	Vt.	500,000	50,000	10	*			61,000	Apr 1885	.30
111	San Francisco, C	Cal.	5,000,000	50,000	100	45,000	Sept 1880	.50	20,000	Feb. 1883	.05
112	Savage, S	Nev.	11,200,000	112,000	100	6,156,000	Jun. 1886	.50	4,460,000	July 1889	3.00
113	Security L Mg, Mfg.	Colo.	1,000,000	100,000	10	*			50,000	July 1884	
114	Shoshone, G	Idah	150,000	150,000	1				7,500	Apl. 1883	.01
115	Sierra Buttes, G	Cal.	225,000	22,500	10				1,430,639	Apl. 1886	.25
116	Sierra Grand, S	N. M.	2,500,000	500,000	5				860,000	Sept 1884	.25
117	Sierra Nevada, G. S.	Nev.	10,000,000	100,000	100	5,917,628	May	1886	.25	192,000	Jan. 1871	1.00
118	Silver Cord, G. S. L.	Colo.	5,000,000	500,000	10				225,000	Nov. 1883	.25
119	Silver King, S	Ariz.	10,000,000	100,000	100				1,700,000	Jun. 1885	.25
120	Silverton, G S. L	Colo.	2,000,000	200,000	10	*			56,000	Jun. 1886	.02
121	Small Hopes, Cons., S.	Colo.	5,000,000	250,000	20	*			2,050,000	May. 1886	.25
122	Smuggler, S L	Colo.	600,000	6,000	10				66,700	Aug. 1883	.25¾
123	Socorro, C	N. M.	250,000	2,500	100				4,000	Mch 1882	.00
124	South Yuba, G	Cal.	2,000,000	40,000	50	*			150,000	Oct. 1881	.75
125	Spring Valley, G	Cal.	200,000	200,000	1	*			50,000	Jan. 1881	.25
126	Standard, G. S	Cal.	10,000,000	100,000	100	25,000	Oct. 1884	.25	4,425,000	Mar. 1884	.25
127	Stormont, S	Utah	500,000	5,000	1	*			155,000	Nov. 1881	.05
128	St. Joseph, L	Mo.	1,100,000	110,000	10	*			495,000	Dec. 1885	.20
129	Syndicate, G	Cal.	10,000,000	100,000	100	38,729	July 1882	.15	48,308	Sept 1885	.10
130	Tip Top, S	Ariz	10,000,000	100,000	100	250,000	Sept 1883	.25	100,000	Nov. 1881	.20
131	Tombstone, G. S. L	Ariz	12,500,000	500,000	25	*			1,250,000	Apl. 1882	.10
132	True Fissure, G. S. L.	Utah	1,500,000	150,000	10	*			75,000	Jun. 1883	.15
133	United Verde, C	Ariz.	3,000,000	300,000	10	*			97,500	Feb. 1884	.2
134	Valeacia, M	N. H.	150,000	1,500	100	*			41,25	Apl 1886	2.50
135	Vizina, S	Ariz.	5,000,000	200,000	25	*			140,000	Apl. 1882	.10
136	Yellow Jacket, G. S.	Nev.	12,000,000	12,000	100	5,448,000	Dec. 1885	.75	2,184,000	Aug. 1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Value.	Assessments. Total levied to date.	Assessments. Date and amount per share of last.
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*	
2	Albion, S. L	Nev.	15,000,000	150,000	100	$577,000	July 1882 .50
3	Allouez, C	Mich	2,000,000	80,000	25	240,000	Feb. 1884 .50
4	Alpha Con., G. S.	Nev.	3,000,000	30,000	100	430,000	Mar 1886 .50
5	Alta, S	Nev.	10,080,000	100,800	100	1,951,400	Feb. 1886 .25
6	American Flag, S	Colo	1,250,000	125,000	10	300,000	Jun. 1877 .25
7	Aspen Mg. & S, S. L	Colo	2,000,000	200,000	10		
8	Barcelona, G	Nev.	5,000,000	200,000	25	*	
9	Battle Creek, G	Dak.	5,000,000	200,000	25		
10	Bear Creek	Cal.	300,000	300,000	1		
11	Bechtel Con., G	Cal.	10,000,000	100,000	100	173,500	n. 1883 .10
12	Belvidere	Cal.		60,000		92,000	b. 1882 .15
13	Belmont, S	Nev.	5,000,000	50,000	100	735,000	Apl. 1886 .10
14	Best & Belcher, G. S.	Nev.	10,080,000	100,800	100	1,698,190	Jun. 1886 .50
15	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*	
16	Black Jack, G	Cal.	250,000	100,000	2½		
17	Bonanza Chief	Mon	1,000,000	1,000,000	1	*	
18	Bondholder	Colo	5,000,000	200,000	2½		
19	Boston Con., G	Cal.	10,000,000	100,000	100	170,000	Nov 1885 .25
20	Bradshaw, S	Ariz.	2,250,000	225,000	10		
21	Buckeye	Colo.	2,000,000	400,000	5	*	
22	" preferred	Colo.					
23	Bull Domingo, S. L.	Colo.	10,000,000	200,000	50	*	
24	Bullion, G. S	Nev.	10,000,000	100,000	100	4,570,000	July 1885 .25
25	Bye and Bye	Ariz.	1,000,000	100,000	10	*	
26	Calaveras, G	Cal.	500,000	500,000	1	*	
27	Cal. W'r & M. Co., G.	Cal.					
28	Castle Creek, G	Idah.					
29	Catskill, S	Nev.	1,500,000	300,000	5		
30	Central Arizona, S.	Ariz.	10,000,000	100,000	100		
31	Cherokee, G	Cal.	1,500,000	150,000	10		
32	Chollar, S	Nev.	11,200,000	112,000	100	934,000	May 1886 .50
33	Climax, S. L	Colo.	2,000,000	200,000	10	*	
34	Colorado No. 2, S. L	Colo.	100,000	10,000	10		
35	Con. Imperial, G. S.	Nev.	50,000,000	500,000	100	1,050,000	May 1885 10
36	Con. Pacific, G	Cal.	6,000,000	60,000	100	174,000	Feb. 1886 .15
37	**Con. Queen Cons, C.	Ariz	1,400 00	140,000	10		
38	Crescent, S. L	Colo.	3,000,000	300,000	10	*	
39	Crocker, S	Ariz.	10,000,000	100,000	100	65,000	May 1886 .20
40	Crowell, G	N. C	500,000	500,000	1		
41	Dahlonega, G	Ga.	250,000	250,000	1	*	
42	Darlanelles, G	Cal.	1,000,000	100,000	10		
43	Decatur, S	Colo.	1,500,000	300,000	5	*	
44	Denver City, S. L	Colo.	5,000,000	500,000	10	*	
45	Denver Gold	Colo.	300,000	60,000	5		
46	Deseret, G. S	Utah	500,000	50,000	10	*	
47	Dunderberg, S	Colo	1,500,000	150,000	10	*	
48	Durango, G	Colo.	500,000	500,000	1	*	
49	Eastern Dev. Co., Lt	N. S.	1,500,000	150,000	10	840,000	May 1885 .10
50	Elko Con., S	Nev.					Mar 1884 .15
51	Empire Lt, G	Mon.	5,000,000	100,000	5		
52	Empire, S	Utah	10,000,000	100,00	100	*	
53	Enterprise, S. L	Colo.	800,000	80,000	10	*	
54	Eureka Tunnel, S. L	Nev.	10,000,000	100,000	100	*	
55	Exchequer	Nev	10,000,000	100,000	100	840,000	Aug 1885 .20
56	Garfield, Lt., G. S.	Nev.	500,000	100,000	5		
57	Globe Copper	Ariz					
58	Gold Placer, G	Colo.	5,000,000	200,000	25	*	
59	Goodshaw, G	Cal.	10,000,000	100,000	100	229,314	Dec. 1885 .25
60	Grand Belt, C	Tex.	12,000,000	120,000	100	*	
61	Granville, G	N. C	300,000	300,000	1	*	
62	Gregory-Bobtail, G.	Colo.	550,000	550,000	1		
63	Gregory Con., G	Mon.	3,000,000	300,000	10	*	
64	Harlem M. & M. Co, G.	Cal.	1,000,000	200,000	5		
65	Head Cent & Tr. S. G	Ariz.	10,000,000	100,000	100		
66	Hidalgo, S	Mex.	200,000	20,000	10		
67	Highland, C	Mich	500,000	25,000	25		
68	Hortense, S	Colo.	2,000,000	200,000	10		
69	Iroquois, C	Mich	1,250,000	50,000	25		
70	J. D. Reymert	Ariz	10,000,000	100,000	100	*	
71	Julia Cons., G. S	Nev.	11,000,000	110,000	100	1,438,000	Nov 1885 .10
72	Kearsarge, C	Mich	1,250,000	50,000	25	100,000	Apl. 1886 5.00
73	Lacrosse, G	Colo.	1,000,000	100,000	10	*	
74	Lee Basin, S. L	Colo.	5,000,000	500,000	10	*	Sept 1882 .25
75	Leviathan, S	Nev.	10,000,000	100,000	100	380,000	
76	Lucerne, S	Colo.	5,000,000	500,000	10	*	Jan. 1885 .10
77	Mammoth Bar, G	Cal.	10,000,000	100,000	100	50,000	Dec. 1881
78	Mariposa pref., G	Cal.	5,000,000	50,000	100	1,687,500	Feb. 1883 .25
79	" common, G.	Cal.	10,000,000	100,000	100	1,975,000	Dec. 1881 .20
80	May Belle, G	Cal.	10,000,000	100,000	100	84,000	Mar 1884 .15
81	Mayflower, S	Nev.	10,000,000	100,000	100	60,000	Feb. 1886 .25
82	Mexican, G. S	Nev.	10,000,000	100,800	100	2,565,760	Jun. 1886 .25
83	Michoacan Synd	Mex.					
84	Mine & Starr, S. L	Colo.	1,000,000	200,000	5	*	
85	Miner Boy, G. S. L	Colo.	5,000,000	500,000	10	*	
86	Miller	Nev	5,000,000	200,000	25		
87	Moose Silver, S	Colo.	3,000,000	300,000	10	*	
88	New Pittsburg, S. L	Colo	2,000,000	200,000	10	*	
89	North Standard, G	Cal.	10,000,000	100,000	100	20,000	Nov	
90	Noonday	Cal.	600,000	60,000	10	208,000	Dec. 1881 .10
91	Old Dominion, C	Ariz.	3,000,000	300,000	10		
92	Oriental	Nev.	2,000,000	200,000	10		
93	Oriental & Miller, S.	Nev.	10,000,000	400,000	25		
94	Overman, G. S	Nev.	11,520,000	115,200	100	3,683,040	Apl 1885 .20
95	Parrott, C	Mon.	1,800,000	180,000	10		
96	Park, S	Utah	2,000,000	200,000	10		
97	Peer, S	Ariz.	10,000,000	100,000	100	125,000	Apl. 1886 .10
98	Peeriess, S	Ariz.	10,000,000	100,000	100	275,000	May 1886 .50
99	Potosi	Nev.	10,200,000	112,000	100	1,011,200	Apl. 1886 .30
100	Rappahannock, G. S.	Va	250,000	250,000	1	*	
101	Red Elephant, S	Colo	50,000	500,000	1	*	
102	Retort M. & M. Co.	Colo.			10		
103	Rollins, G. S	Colo.	5,000,000	200,000	25	*	
104	Ropes, G. S	Mich	2,000,000	80,000	25	61,200	Mar 1886 .10
105	S. P. & Canon del A C	N. M.	10,000,000	400,000	25	*	
106	Silver Cliff, S	Colo.	5,000,000	400,000			
107	Sonora Con	Mex.	5,000,000	200,000	25	*	
108	South Bodie, G	Cal.					Mar 1882 .15
109	South Bulwer, G	Cal.	10,000,000	100,000	100	100,000	May 1881 .25
110	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan. 1883 .05
111	South Pacific	Cal.	500,000	100,000	5		
112	State Line, S	Nev.	250,000	250,000	1		
113	Sunday Lake, I	Mich	1,250,000	50,000	25		
114	Sullivan, G. S. L	Me	500,000	100,000	5	125,000	Dec. 1882 .25
115	Sutro Tunnel	Nev.	20,000,000	2,000,000	10	*	
116	Tamarack, C	Mich.	1,000,000	40,000	25	520,000	Apl 1885 3.00
117	Taylor-Plumas, G	Cal.	1,000,000	200,000	5	*	
118	Tioga Cons., G	Cal.	10,000,000	100,000	10	*	
119	Todos Santos, S	Mex.	1,000,000	100,000	100	325,000	Oct 1882 .10
120	Tuscarora, S	Nev.	10,000,000	100,000	1 0	110,000	Oct 1881 .15
121	Unadilla, S	Colo.	50,000,000	500,000	100	*	
122	Union Con., G S	Nev.	10,000,000	100,000	100	2,085,000	Apl 1886 .25
123	United Lundy, G.	Cal.	1,000,000	20,000	5		
124	Utah, S	Nev.	2,000,000	20,000	100	1,810,000	Dec 1884 .50
125	Vandewater	Nev.	20,000,000	200,000	100	*	
126	Washington	Ariz.	2,000,000	200,000	10		
127	Wellington, G	Nev.	100,000	50,000	2	*	
128	West Granite Mt., S.	Mon	5,000,000	500,000	10	*	
129	Whalen Copper	Nev.	2,500,000	100,000	25		
130	Whittier Dr'e Bull'n	Nev.	1,000,000	100,000	10		

G. Gold. S. Silver. L. Lead C Copper. * Non-assessable. † This company, as the Western, up to December 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood has previously paid $275,000 in eleven dividends, and the Terra $75,000. ‖ Previous to the consolidation of the California and Consolidated Virginia in August, 1881, the California had paid $31,320,000 in dividends, and the Consolidated Virginia $42,900,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid $1,350,000 in dividends.

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE.												SALES.
	June 12.		June 14.		June 15.		June 16.		June 17.		June 18.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mon.													
Amie Con., Co.													
Argenta													
Bassick, Co.													
Belle Isle, Ne.													
Bodie Cons., Ca.	1.55		1.55		1.50				1.80		1 60		1,200
Breece													
Bulwer, Ca.	1.70		1.70						1.90	1.85	1.70	1.65	2,100
Caledonia							1.10	1.00	1.00		1.00		1,200
Castle Creek			.05										500
Chrysolite, Co.													
Colorado Central			2.50		2.50		2.55	2 50					2,500
Cons. Cal. & Va., Ne.			1.30	1.20			1.35	1.30	1.20		1.20	1.15	5,300
Crown Point													
Deadwood-Terra	3.60										3.00	2.50	350
Eureka Cons., Ne.							2.40		2.50				125
Father de Smet, Dk.									1.00				5
Freeland													
Gold Stripe, Ca.													
Gould & Curry, Ne.													
Grand Prize, Ne.													
Green Mountain, Ca.													
Hale & Norcross, Ne.	2.25		2.40				2.55		2.45				1,350
Hall-Anderson, N. S.													
Homestake, Dk.	21.00												100
Horn-Silver, Ut.			3.00		2.95		3.00	2.95	3.00		2.90		2,700
Independence, Ne.													
Iron Silver, Co.	2.00		1.95										300
Leadville C., Co.	.25								.24		.25		645
Little Chief, Co.	.24		.24								.23		1,900
Little Pittsburg, Co.					.35								200
Martin White, Ne.													
Moulton													
Navajo, Ne.	.65				.95	.90	.90	.75	.85		.90	.75	4,200
North Belle Isle, Ne.													
Ontario, Ut													
Ophir													
Osceola													
Plymouth											13.50	13.25	210
Quicksilver Pref., Ca.							24.50		23.00				200
" Com., Ca.									5 00				100
Quincy													
Robinson Cons., Co.	.55		.55						.51	.50			575
Savage, Ne.					.90				1 20		1.15		550
Sierra Nevada, Ne.					.30								100
Silver King, Ar.	.40												300
Spring Valley, Ca.													
Standard, Ca.											.90		100
Stormont, Ut.													
Tip Top, Ar.													
Yellow Jacket	.95		1.00										500

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE.												SALES.
	June 12.		June 14.		June 15.		June 16.		June 17.		June 18.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Albion													
Alta													
American Flag													
Barcelona, G.													
Bechtel Con., G.													
Belvidere													
Belcher													
Best & B'icher, G. S.													400
Big Pittsburg, S. L.													
Bowman Silver													
Bull-Domingo, S.L.													
Central Ariz'na, S.													
Chollar													
Cons. Imperial													
Con. Pacific													
Cusi													
Decatur													
Durango, G.													
Eastern Oregon													
Goodshaw, G.													
Harlem M. & M. Co.													
Harshaw													
Kossuth													
Lacrosse, G.	.09	.08	.09		.09		.09				.09		7,000
Mariposa Pref., G.													
" Com., G.													
Mexican, G. S.													
Mono	2.15				1.90								500
New Pittsburg													
North Standard, G.													
N. Horn-Silv'r, S L.													
Pri'nt'l & Miller, S													
Plutus													
Potosi													
Rappahannock, G	.11		.11									.11	5,200
Red Elephant, S.													
Ridge													
Silver Cliff, S.													
Sonora Con.													
South Bodie, G.													
South Bulwer, G.													
South Hite													
South Pacific													
State Line, 1 & 4, S.													
" Nos. 2 & 3, S.	.11		.11		.11		.12		.10		.11		11,500
Sutro Tunnel													
Tamarack													
Tioga													
Unadilla, S													
Union Cons., G. S.	.40				.43								900
Utah													

Dividend shares sold, 27,310. Non-dividend shares sold, 25,500.

San Francisco Mining Stock Quotations.

Daily Range of Prices for the Week.

NAME OF COMPANY.	CLOSING QUOTATIONS.					
	June 11.	June 12.	June 14.	June 15.	June 16.	June 17.
Albion						
Alpha						
Alta	.40		.45	.45	.45	
Argenta						
Bechtel						
Belcher	1.12½					
Belle Isle						
Best & Belcher		.95	.80	.75	.75	.75
Bodie	1.50	1.50	1.50	1.62½	1.87½	1.75
Bullion						
Bulwer		1.62½	1.62½	1.75	1.75	1.62½
Chollar	.40	.45	.40	45	.40	.40
Con. Pacific	.30	.30	.30	.30	.35	.35
Con. Cal. & Va.	1.12½	1.25	1.12½	1.12½	1.25	1.25
Crown Point						
Day						
Elko Cons						
Eureka Cons	2.00		2.25		2.25	2.37½
Exchequer						
Gould & Curry	.85	.85	.80	.75	.85	.80
Grand Prize						
Hale & Norcross	2.12½	2.25	2.12½	2.12½	2.12½	2.12½
Independence						
Martin White						
Mexican	.35		.30			.30
Mono	2.00	2.00	2.00	2.12½	2.25	2.00
Mount Diablo					3.00	3.00
Navajo	.65	.85	.75	.65	.75	.80
Northern Belle						
North Belle Isle						
Ophir	.35			.40	.45	.45
Overman						
Potosi	.45	.50	.45	45		.40
Savage	.95	1.00	.95	1.00	1.25	1.25
Scorpion						
Sierra Nevada	.30		.35	.35	.35	.40
Silver King						
Tip-Top						
Union Cons.	.35	.40	.35	.35		.40
Utah	.45	.50				
Wales Cons.						
Yellow Jacket	.85	.80				

their production last Saturday. When the market moves, we look for better prices. The market has been neglected in a measure by speculators, who have given their attention almost exclusively to the Railroad Stock Department of the Exchange. In the latter department, the trading yesterday aggregated nearly 175,000 shares, the largest business ever done. There is considerable inquiry for Cotton Oil Trust Certificates at advancing figures, and they are going into strong hands. The new Clearing-House is giving good satisfaction and making prompt settlements, and in this matter our Consolidated Exchange has shown itself to be more progressive than the old Stock Exchange.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange:

		Opening.	Highest.	Lowest.	Closing.	Sales.
June	12					
	14	66c.	68⅝c.	66c.	68⅝c.	9,310,000
	15	67⅞	68¼	67	67¼	5.601,000
	16	67	67¾	66⅝	67	4.658,000
	17	66¾	67¾	66½	67⅜	3,534,000
	18	67½	68½	67⅜	67¾	5,167,000
Total sales, barrels						28,270,000

ASSESSMENTS.

COMPANY.	No.	When levied.	Delinquent in office.	Day of sale.	Amount.
Andes, Nev.	29	May 28	July 2	July 22	.25
Apex, Utah		June 12			.03
Baker Divide, Cal.	11	May 3	June 7	June 28	.25
Baltimore & North Carolina, N. C.		June 7	July 10	July 10	.10
Bannock, Idaho		June 7	July 26	July 26	.50
Belle Isle, Nev.	9	May 5	June 9	July 1	.10
Belmont, Nev.	40	Apl. 30	*J'ne 24	*J'ly 20	.10
Best & Belcher, Nev.		June 14			.50
Bodie Tunnel, Cal.					.25
Bowman, Nev.		May			.05
Carbonate Hill, Dak.	1	May 11	May 20	July 2	½
Chollar, Nev.	20	May 21	June 24	July 15	.50
Crocker, Ariz	3	May 25	July 6	July 28	.20
Eureka Con., Nev	9	Apl. 20	May 31	June 22	1.00
Golden Fleece, Cal.	5	May 20	July 13	Aug. 2	20.00
Golden Prize, Nev	6	Apl. 19	May 21	June 22	.30
Hale & Norcross, Nev.	90	May 10	June 14	July 7	.50
Holmes, Nev		May 21			.50
Homew'd B'nd, Dak.	1	May 25	June 26	July 20	¼
Jumbo, Dak	1	May 11	June 15	June 28	¼
Justice, Nev.	44	May 12	June 16	July 6	.10
Live Oak Drift, Cal.	1	May 25	June 30	July 22	.05
Liberty, Dak.	3	May 24	June 25	July 12	.02
Lucky Hill Con., Nev.	3	April 5	June 7	July 7	.05
Mammoth, Utah		Apl. 21	June 10	July 10	.10
May Flower Grav., Cal	30	Apl. 30	June 4	June 25	.25
Mexican, Nev.		June 17			.25
New Basil Con., Nev.	9	May 19	June 24	July 15	.05
North Peer, Ariz.		May 20			.02
Ophir, Nev	5	June 7	July 13	Aug. 2	.25
Palomas Placer, Cal.	1	June 1	July 5	July 19	.02
Peerless, Ariz	8	May 12	June 22	July 16	.50
Rockland Land & Mining, Mich.		June 8	Aug. 1	Aug. 1	.03
Sampson, Utah		Apl. 17	May 25	June 26	.25
Savage, Nev.		June 17			.50
Sierra Nevada, Nev.	85	May 27	July 1	July 20	.25
Silver Ridge, Dak.	1	May 13	June 17	July 17	.01
West Galena, Dak.		Apl. 13	May 29	June 19	¼

* The delinquent day of the above assessment is hereby postponed to the 24th day of June, 1886, and the day of sale of delinquent stock until the 20th day of July.

Unlisted Stocks and Foreign Quotations.

We give below the most reliable quotations obtainable for unlisted stocks and quotations on outside and foreign exchanges:

NAME OF COMPANY.	Location.	Price.	Where quoted.
Adams, S. L.	Colo.	$4@$5	Unlisted
Bellevue, S. L.	Idaho.	$5	Unlisted
Big Bend H'dr'lc, G.	Dak.	$5	Unlisted
Bird's Eye Creek, G.	Cal.	$3.12½@$4.37½	London
Bonanza King, G.	Cal.	$10	Unlisted
California, G.	Colo.	75c.@$1.00	London
Colo. United, S. L.	Colo.	$10.00@$12.50	London
Eb'rh'dt & Mon't'r, S	Nev.	$3.00@$3.50	London
Elkhorn, G. S.	Mont.	$10	Unlisted
Gold Hill, G.	N. C.	$2@$2.50	London
Granite Mt., S.	Mont.	$25@$28	St. Louis
Helene, G. S. L. C.	Mont.	$2.25	Helena
Honorine, S. L.	Utah.	75c.	Unlisted
Iron Hill, S.	Dak.	$7	Deadwood
I. X. L., G.	Cal.	31¼@93¾c.	London
Kohinoor & Donaldson, G. S.	Colo.	50@62c.	London
La Plata, S. L.	Colo.	$1.12@$1.37	London
La Trinidad, S.	Mex.	$17.50.@$20.00	London
Lexington, G. S.	Mont.	$12	Paris
" Org'niz'rs' shares	Mont.	60c.	Paris
Montana, Lt., G. S.	Mont.	$38.75@$41.25	London
New Albion, G.	N. S.	$4.50@$4.75	London
New Emma, S.	Utah.	75@87c.	London
New Hoover Hill, G. S	N. C.	93¾@$1.56¼	London
Oxford, G.	N. S.	$1.25@$1.87½	London
Placerville, G.	Cal.	$1.25@$1.50	London
Plumas Eureka, G.	Cal.	$1.87½@$3.12½	London
Richmond Con., S. L	Nev.	$26.25@$28.75	London
Ruby & Dunderberg, G.	Nev.	$1.25@$1.50	London
Russell Gold, G.	N. C.	62@87c.	London
Sierra Buttes, G.	Cal.	$6.25@$7.50	London
Silver Queen United, S.	Mex.	$10.00@$10.62½	London
Small Hopes, S.	Colo.	$7.00	St. Louis
St. Joseph's, L.	Mo.	$7@$7.50	Unlisted
Uncle Sam, S.	Dak.	$3	Deadwood
United Mexican, S.	Mex.	$14.37½@$15.62½	London

Foreign quotations are per mail advices on basis of £1 = $5 and $1 = 5 fcs.

Dividends.

Big Bend Hydraulic Mining Company, of Dakota, has declared dividend No. 29 of three cents a share, or $6000, payable June 21st, at No. 181 Broadway, New York City.

Franklin Mining Company, of Michigan, has declared dividend No. —, of $1 a share, or $40,000.

Homestake Gold Mining Company, of Dakota, has declared dividend No. 95 of forty cents a share, or

COAL STOCKS.

NAME OF COMPANY.	Par value of shares.	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted so much per share.												Sales from June 12th to June 18th, inclusive.
		June 12.		June 14.		June 15.		June 16.		June 17.		June 18.		
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal														
Cameron Coal	50	19¼	19	19⅛	18⅞	19⅛	18	18½	17½	18⅝	18	19	17	3,750
Col. C. & I	10	24	23¾	23¼	23	25	.....	24⅞	24½	25	24¼	25¼	24⅞	2,747
Ches. & O. RR	100	.....	.....	.....	.....	.....	.....	8	.....	.....	.....	9	.....	110
Consol. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cumb. C. & L	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & H. C	100	98¾	98⅛	98¾	98⅝	98¼	98	99½	98⅛	99⅝	98¾	99⅝	98¾	14,835
D., L. & W. RR	50	131	130⅜	130¾	130⅛	130⅜	129¾	131¼	130⅛	131⅝	131	131⅝	131	294,725
Elk Lick Coal Co														
Lehigh C. & N.†	50	50¼	50⅛	50⅛	50⅜	50⅝	50⅜	50⅝	50⅜	50⅝	50⅛	.....	.....	2,684
Lehigh Valley RR.†	50	56¾	.....	56⅞	56¾	.....	.....	57	56¾	57	56⅞	.....	.....	347
L. & W. C. & I. Co														
Maryland Coal	100	.....	.....	13	12	13¼	13	13	.....	13½	.....	13½	13	1,265
Montauk Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morris & Essex	50	143½	.....	.....	.....	.....	.....	.....	.....	.....	.....	144	.....	50
New Central Coal	100	.....	.....	.....	.....	.....	.....	14	.....	12½	.....	.....	.....	211
N. J. C. RR.	100	54¾	53½	55⅝	54½	55⅜	54⅝	55⅜	54⅞	55⅜	54⅞	55	54½	53,013
N. Y. & S. Coal	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. Coal	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	262	.....	25
Penn. RR.†	50	52¾	52⅝	52⅞	52¾	53	52¾	53⅛	52¾	53⅛	53	.....	.....	6,253
Ph. & R. RR.*	50	24½	24	24½	24	24¼	23⅝	24½	24⅛	25½	24⅞	25½	24⅞	63,490
Spring Mountain	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Westmoreland Coal†	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* Of the sales of this stock, 20,910 were in Philadelphia, and 42,580 in New York.
The quotations for these stocks are not percentage, but actual price. Total sales, 443,505.

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to June 18th:

To	From Philadelphia	From Baltimore.	From New York shipping ports.
Alexandria	.80	.....	.....
Baltimore	.58§	.....	.....
Bangor	1.05*	.....	.....
Bath, Me	1.05*	1.20	.90*
Beverly	1.05*	1.25	.90*
Boston, Mass	1.05*	.....	.85*
Bristol	.....	.....	.....
Bridgeport, Conn.	.....	1.10	.55
Brooklyn	.....	1.00	.18§
Cambridge, Mass.	1.05*‡	.....	.85*‡
Cambridgeport	1.05*‡	.....	.85*‡
Charleston, S. C.	.75@.80	.80	.....
Charlestown	1.05*	.....	.85*
Chelsea	1.05*	.....	.85*
Com. Pt., Mass.	1.10*	.....	.....
E. Boston	1.05*	.....	.85*
East Cambridge	1.05*‡	.....	.....
E. Gr'nwich, R. I.	.....	.....	.80
Fall River	.....	.....	.75@.80
Galveston	.....	3.00	.....
Gardiner, Me	.....	.....	.....
Georgetown, D. C.	.80	.....	.....
Gloucester	1.15*	.....	.....
Lynn	1.15@1.25*	.....	.....
Newark	.....	1.30***	.....
New Bedford	.....	.....	.85
Newburyport	.....	1.10	.....
New Haven	.....	.....	.55
New London	.....	.....	.75
Newport	.....	.....	.....
New York	.....	1.00	.18§
Norfolk, Va	.50	.....	.....
Norwalk, Conn.	.....	.....	.....
Norwich	.....	.....	.75@.80
Pawtucket	.....	.....	.....
Portland, Me	1.05*	1.20	.....
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